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U. S. S. "PALOS," TYPE OF RIVER GUNBOAT NOW ON THE ASIATIC STATION AND ASSEMBLED THERE. SHANGHAI IN KNOCK-DOWN CONDITION

JOINT ARMY AND NAVY OPERATIONS — PART II

BY CAPTAIN W. S. PYE, U. S. NAVY

IN THE first article of this series, Joint Army and Navy Operations—Part I, published in the Naval Institute PROCEEDINGS for December, special attention was devoted to a discussion of the requirements for effective cooperation between the War and Navy Departments, which cooperation, as was there stated, is a fundamental condition precedent to effective cooperation by forces within the theater of operations.

Also, in the previous article it was pointed out that the concept of the war, determined by the President upon the advice of the War and Navy Departments, is the guide to the character of the war and is the foundation upon which are based the Joint Basic Readiness Plans and Joint Basic Operating Plans.

Cooperation between the War and Navy Departments so far as planning is concerned, is made effective through the Joint Board. In the preparation of contributory plans to make the basic plans effective and in the execution of these plans there must be further cooperation between the subordinate agencies of the War and Navy Departments. A discussion of the cooperation which is required to make the basic readiness plans effective and to insure strategic deployment in accordance with the basic operating plans, would cover a wide field of administrative activities, including cooperation with such agencies as the war industries board, selective service organization, etc.

A discussion of such activities, though it might be desirable, cannot be considered to be within the field to be covered by these

articles. It will be assumed, therefore, that effective administrative cooperation exists, and the requirements for effective cooperation between forces of the Army and Navy within the theater of operations will now be considered.

Effective cooperation between army and navy forces within the theater of operations is dependent upon—

(a) *Mutual confidence between commanders and personnel of respective army and navy forces.*

(b) *Efficient training of personnel in the types of operations requiring joint action.*

(c) *A definite assignment of responsibility and commensurate authority.*

(d) *The assignment of definite strategical objectives.*

(e) *The provision of adequate and suitable means for the accomplishment of the task.*

The necessity of mutual confidence was pointed out in Part I but, because of its importance, is repeated here.

It is well recognized that there does not exist a spirit of comradeship between soldiers and sailors. This antipathy, if we judge by history, dates back for centuries. It may have begun with the practice of Romans and Phoenicians of embarking soldiers on the galley to do the fighting. It was probably accentuated in the British service, from which we obtain many of our traditions, in the Elizabethan and Cromwellian periods, during which the British Fleets often were put under the command of generals.

During a period of nearly two hundred years after the defeat of the Spanish Armada, most of the British joint operations were characterized by failure due primarily to lack of sympathy and confidence between the Army and Navy.

It is related in history that when in 1655 Cromwell sent a joint expedition to capture the West Indies, he was so certain that Admiral Penn and General Venables would disagree as to the method of procedure, that he sent three commissioners with the expedition to act in cases of disagreement between the two commanders. Naturally, the operation failed, for the appointment of the commissioners indicated lack of confidence in the commanders and the commanders had no confidence in the commissioners.

Other instances in British operations are numerous, such as the joint operation against Cartagena under Admiral Vernon and

General Wentworth, and the Walcheren Expedition under Admiral Strachan and General Lord Chatham.

The French, too, have had many illustrations of the difficulty encountered in obtaining efficiency in joint operations. Although the French have usually followed the plan of having a joint commander, success has not been frequent. Certainly the French experience proves that the appointment of an officer to joint command does not in itself insure success. A lack of mutual confidence can destroy any chance of effective cooperation.

Whatever its cause, a lack of sympathy and confidence between the Army and Navy is a serious obstacle to the successful conduct of joint operations and every endeavor should be made to eradicate it.

Mutual confidence between army and navy forces can be attained only by training in joint operations based upon mutually accepted standard practice instructions and doctrine.

In no way can a feeling of comradeship be obtained except by contact and close association of personnel of the two services. Joint exercises furnish the means of obtaining this contact and association. Such exercises will acquaint each service with the methods of operation of the other service and will give an insight into its problems, difficulties and requirements, which can be obtained in no other way. Confidence will increase with knowledge of the sister service and with the eradication of differences of opinion through practical experience. The self confidence of each service will also be increased by experience in such operations.

So important is this joint training that the British while preparing for the Gallipoli Campaign in the Bay of Mudros, continually exercised their army units in landing operations in cooperation with the Navy. The French, when landing on the Asiatic side of the Dardanelles, had many delays and many unfortunate accidents which have been attributed to the fact that they had had but one rehearsal in landing operations, and, consequently, had not reached a high state of efficiency in the performance of such operations. Had the British not had opportunities to practice landing and to develop a satisfactory standard practice, the losses upon landing would doubtless have been much greater.

The United States Army and Navy have conducted exercises at various times but always as opponents. It is essential that in the future the exercises provide for army and navy cooperation and

that such cooperation shall cause the forces to work in physical cooperation in landing operations.

Perhaps our most serious obstacle to the development of mutual confidence is the absence of standard practice instructions and doctrine relating to joint operations, with the consequent uncertainty as to questions of command, functions, and methods of procedure.

An attempt is being made in this series of articles to furnish a ground work for such instructions and doctrine, but it is recognized that such standard practice and doctrine will be valuable only when mutually accepted by the Army and Navy after being put to the test of actual experience and practice. For the purpose of testing proposed instructions, joint operations on a large scale are indispensable.

Another of the chief causes of inefficient joint operations in the past has been the failure of the superior to assign definite authority and responsibility.

Instructions from superior authority must assign definite responsibility and establish commensurate authority.

Excepting inherent lack of mutual confidence there has been no condition which has jeopardized effective cooperation to such an extent as has the absence of definitely assigned responsibility and authority.

The British have consistently maintained the principle that in joint operations the admiral is supreme as to operations afloat while the general is supreme as to operations on shore. On the contrary, European continental nations like France and Germany, have always appointed a joint commander for the expedition. The United States has in general followed the British practice.

Perhaps there is no subject to be discussed in this series of articles concerning which differences of opinion will be so great or so strongly maintained. It is the author's opinion that there must be definite understanding as to unity of command wherever army and navy forces are cooperating.

In the case of extensive joint operations in which the Army and Navy are not physically cooperating, or in which physical cooperation is on a small scale, and where the operations are conducted within easy communicating distance of the seat of government, joint command may repose in the President, he being guided in its exercise by the Joint Board. In operations requiring physical

cooperation of army and navy forces, conducted at a long distance from the seat of government, joint command should be assigned to an admiral or general designated by the President upon the advice of the War and Navy Departments; the choice as to whether the joint commander shall be an admiral or a general being dependent upon the nature of the operations.

In our own history many examples can be found to indicate the danger of the President exercising command over military and naval forces when such command is exercised without competent professional advice.

The Civil War furnishes instances of presidential interference. It was not until General Grant was given command of all of the armies that real progress was made.

At the time of the Civil War there was no real General Staff and no Joint Board. The President's advice was received largely from persons of no military training, who were often influenced by personal or political motives.

In 1915 President Wilson issued an order forbidding the Joint Board to meet. We entered the war unprepared and without a properly constituted Joint Board or staff to advise the President. It is probably fortunate for our Army's reputation that its operations were conducted so far from the seat of government that General Pershing was given full authority and responsibility for its operations.

While there is not sufficient space in this article to describe McClellan's Peninsula Campaign it is suggested that a full account of it be read to see the dangers of interference from ill advised presidential action.

Before discussing this question of joint command further, it is considered necessary to divert from the main theme long enough to analyze *command*. Such an analysis might be out of place in this article were it not for the fact that many of the inefficient operations of the past have been, and many of the fears concerning joint command will be, due to failure to appreciate the dual nature of command.

Command consists of two elements which, for purposes of analysis, may be designated—the directive element and the instructive element.

Directive command asserts what is to be done; the objective to

be attained. The responsibility for directive command cannot be delegated. It is the exercise of definite authority inherent in one's orders to command.

Instructive command asserts how the task is to be accomplished. This element of command may be omitted entirely, in which case the responsibility for the method used is delegated to the junior.

If the command contains only the instructive element the junior is responsible that the command is implicitly obeyed and is not responsible for the result.

Step by step as the size of units and complexity of operations increases, the instructive element of command is made use of less and less. As operations become of still greater extent and forces are composed of large units, it becomes impracticable for a commander to issue instructive commands. As a consequence instructive command is made largely automatic through standard practice instructions and doctrines, and commanders rely on the knowledge and common sense of their subordinates to insure the efficient performance of the required operations without detailed instructions. The directive element of command becomes paramount and the instructive element may entirely disappear.

Unity of direction in the operations of war is essential. Divided responsibility for directive command is fatal.

The allied armies on the western front failed to achieve success until Marshal Foch was given directive command over all the allied armies. While it is hoped that the Army and Navy will cooperate better than did the allied armies, it will be found that there will be sufficient differences of opinion to require joint command when the theater of operations is at a great distance from the seat of government and the operations are of such a nature as to require physical cooperation.

The advent of aviation as an arm of the Army and Navy has accentuated the need for joint command for no longer can the shore be the dividing line between the authority of the general and the admiral.

History proves beyond a doubt that effective cooperation between modern army and navy forces will require that in joint operations the responsibility and authority for the exercise of directive command shall be vested in one person.

As has been pointed out before, there may be instances in which

this command can be exercised by the President advised by the Joint Board, but in cases where forces are cooperating physically at a great distance from the seat of government, the authority and responsibility for the exercise of directive command jointly over army and navy forces in the theater of operations, should be vested in one officer designated by the President upon the advice of the War and Navy Departments.

The fear of joint command which for several years made the British decline to place their armies under the joint command of a French general, was largely due to national jealousy. The objection to joint command was also due to lack of confidence in the French leaders and in the French Army. It was not until the entry of the United States into the war that the French morale was improved to an extent which reestablished confidence. Also the appointment of Marshal Foch provided a leader in whom the British had confidence. In the agreement placing the British Army under the allied commander-in-chief a condition was insisted upon which provided in effect that Marshal Foch should exercise directive command only and that all orders involving the British Army should be issued to the British commander-in-chief and by him transmitted to the British troops.

This is correct. The principle may be expressed thus:

In joint operations responsibility with commensurate authority shall be definitely assigned by higher authority.

An officer assigned to joint command shall exercise directive command. He shall exercise instructive command only over forces of the service to which he belongs.

Directive command to forces of the service to which the joint commander does not belong, shall be issued only to the senior officer present of such service.

It is apparent from frequent discussions of the subject of joint command that some officers fear that a commander appointed to joint command will not abide by these principles nor give adequate consideration to the views of the commander of the force of the other service.

This danger naturally does exist, but there are three ways to assist in preventing it from occurring. These are:

(1) Careful selection of officers assigned to high command, having in view the ability to cooperate as one of the primary attributes.

(2) Development of mutual confidence to such an extent that a joint commander will feel the utmost confidence in the recommendations of the officer commanding forces of the other service.

(3) Appointment of a joint staff to assist the joint commander.

The first and second are essential for the success of any joint operation. The third is necessary only in the case of operations involving major strategical decisions.

The opponents of joint command can, by a careful perusal of history, find examples of successful joint operations conducted without the designation of joint command.

Among these may be cited; the capture of Louisburg by the British under Admiral Boscawen and General Amherst; the capture of Quebec by General Wolfe and Admiral Saunders; the capture of Martinique by Admiral Rodney and General Monkton, and the successful campaign in the West Indies by Lord St. Vincent and General Grey.

A study of these campaigns, however, will indicate that at no time were the expeditions endangered by the presence of an active enemy fleet. From the tactical point of view the interests of the army forces in the operations were paramount and the naval forces were in reality subordinate parts of these expeditions.

Furthermore the strategical objectives were definitely fixed and the necessity of making important strategical decisions did not arise except at Quebec. At Quebec Admiral Saunders was becoming fearful that his fleet would be frozen in before the campaign was finished and on several occasions made known his intentions of abandoning the campaign if Quebec did not fall by a definite date. The capture of Quebec prevented a serious dispute between the admiral and the general.

Here was a situation which in its general aspects may be frequent. Two commanders of equal authority are cooperating. A dispute arises as to whether the operations shall be continued or abandoned. It is essential that, unless communication with a joint superior is possible, one of these officers be charged with the responsibility for the decision and that he have adequate authority to require obedience to his decision. This necessity for placing the responsibility has been previously stated as a principle.

The consideration of this example leads to another question—How shall one determine whether the Army or Navy has the paramount interest in the operation?

The question of paramount interest, has been considered from the point of view of coast defense in the joint army and navy publication entitled *Joint Army and Navy Action in Coast Defense.* The paragraph relating to this subject reads as follows:

17. Cooperation between army and naval officers directing operations against enemy attacks will be governed by the following principles:

(a) When an enemy force of a strength greatly superior to that of the naval force available for use against it approaches the coast, the naval officer will inform the army officer of the situation and shall assume that the Army has a paramount interest in the operation and shall coordinate the operations of the naval forces with those of the military forces.

(b) If, however, the conditions are such that the enemy is, or can be, engaged by a naval force approximately in strength that of the enemy, the army officer shall be so informed and shall assume that the Navy has a paramount interest in the operation and shall coordinate the operations of the military forces with those of the naval forces.

(c) In the application of these principles, it is assumed that both the Army and Navy have forces suitable for operating against enemy attacking forces; one service obviously could not be given a predominating interest in frustrating an enemy attack, if it did not have available forces which were suitable for operations against the attacking forces, even though the other service were greatly inferior in strength to the attacking forces.

The decisions as to paramount interest contained in these paragraphs flow naturally from the missions of the Army and Navy. In offensive operations the decision is not so easy.

Take, for example, the capture of an enemy base such as Port Arthur in the Russo-Japanese War. The capture of Port Arthur was not essential to the success of the Japanese Army strategical plan except in so far as it was necessary to assist the navy to destroy the Russian Fleet. But again the destruction of the Russian Fleet was essential principally to secure the lines of communication of the Japanese Army.

The army force employed at Port Arthur greatly outnumbered the naval forces and was in fact the force which eventually destroyed the Russian Fleet.

In this case it appears that tactically the interest of the Army was paramount whereas strategically the navy interest was paramount. Tactical decisions must be made immediately on the spot. Strategical decisions can be made at greater leisure and often better

from a distance where the man who makes the decision is less affected by the local distractions. From this it is reasonable to conclude that—

In joint operations conducted within communicating distance of a common superior, tactical considerations shall determine paramount interest, whereas, if no communication with a common superior is possible strategical considerations shall determine paramount interest.

If this conclusion is correct it is apparent that in some instances paramount interest may change with the situation. While this method does not insure a clear cut decision there does not appear to be any other logical basis for its determination. The conclusion above indicates that:

For joint operations to be conducted outside of easy communicating distance from a common superior, such superior shall appoint a joint commander who shall be responsible for all strategical decisions.

An officer appointed as joint commander shall yield tactical command to the senior officer of the other service when the situation is such that the most effective action against the enemy, either offensive or defensive, can be taken by the service to which the joint commander does not belong.

For joint operations to be conducted within easy communicating distance of a common superior, no joint commander will be appointed. The superior will, however, state which service has the paramount interest in the operation and the commander of the force of the service so designated shall exercise directive tactical command unless there is a marked change from the contemplated situation.

Upon such a change in the situation the commander of the force designated as having the paramount interest shall yield tactical command to the commander of the force of the other service when such service can take the most effective action against the enemy.

Strategical objectives must be definitely assigned

Many of the inefficient joint operations of the past have been influenced by the failure of superior authority to assign definite strategical objectives to forces.

This has been due in many cases to the inefficient performance

of duty of superior authority at the seat of government. War plans were not made. Operations were conducted in a most haphazard fashion. Decisions were hastily made and orders issued without adequate consideration. This situation was largely due to the civilian control of the operations of war. The best professional officers were sent into the field where they seldom received adequate support from the government.

The condition in England at the beginning of the nineteenth century is clearly pointed out in the following quotation from Napier's *Peninsular War:*

The good fortune of England was never more conspicuous than at this period, when her armies and fleets were thus bandied about, and blind chance governed the councils at home. For, first, a force collected from all parts of the Mediterranean was transported to the Baltic, at a time when an expedition composed of troops which had but a short time before come back from the Baltic was sailing from England for the Mediterranean. An army intended to conquer South America was happily assembled in Ireland at the moment when an unexpected event called for its services in Portugal. A division destined to attack the Spaniards at Ceuta arrived at Gibraltar at the instant when the insurrection of Andalusia fortunately prevented it from making an attempt that would have materially aided Napoleon's schemes against the Peninsula. Again, three days after Moore had withdrawn his army from Sweden, orders arrived to employ it (the fleet) in carrying off the Spanish troops under Romana, an operation for which it was not required, and which would have retarded, if not entirely frustrated, the campaign in Portugal, but the ministers were resolved at any cost to prevent Moore from commanding the Army destined for Portugal. Nor was it the least part of England's fortune that in such long-continued voyages in bad seasons no disaster befell the huge fleets thus bearing her strength from one extremity of Europe to the other.

A further light on the indefinite nature of the strategical objectives assigned to commanders in those days, is indicated by the following quotation from Furse's *Military Expeditions Beyond the Seas:*

When on the 12th of July, 1808, Sir Arthur Wellesley, at the head of ten thousand men, sailed from Cork for the Peninsula, he received no more definite instructions than to afford to the Spanish and Portuguese nations every possible aid in throwing off the yoke of France. The Ministry having laid down no special plan of action, nor determined where the British troops were to be landed, it devolved upon Sir Arthur to decide in which quarter he could act against the French with the best effect. Being thoroughly convinced that there was no prospect of coping with the invaders in Spain, he resolved to undertake operations against Junot in Portugal.

Referring to page 8 on which illustrations of successful joint operations were given, we find that in each case the assignment of the strategical objective was definite.

There must be definite responsibility for the success or failure of each operation of war, and definite responsibility can be justifiably required only when accompanied by commensurate authority and definite assignment of the objective.

It is the duty of the superior to decide upon the strategical objective and to provide adequate force for the accomplishment of the task. Except in so far as the operations of a force affect operations of other forces through coordination of objectives, the officer to whose command has been assigned a definite strategical objective, should not be restricted by suggestions and instructions as to the method to be employed. In the attainment of the assigned objective, within the limits prescribed for the purpose of coordination, a commander should be allowed absolute freedom of action.

A review of the joint operations of the past indicates that where the strategical objectives have been definitely set forth, cooperation has been much more efficient than in operations in which strategical objectives have been indefinite. The presumption is, that most of the differences of opinion between admirals and generals have been in the field of strategy and that it is in operations requiring strategical decisions that joint command is essential. Whether the operation be large or small the more definite the objective the less chance there is for inefficient cooperation.

Effective cooperation is also dependent to some extent upon the means furnished commanders for the accomplishment of their tasks. The provision of the most suitable means available is the duty of the superior. While a subordinate must, of course, make the best use of whatever is provided, cooperation includes the provision of material assistance to the other service, and effective allocation of forces and material will greatly assist in obtaining efficiency in the conduct of joint operations.

Superior authorities in organizing task commands are responsible for providing the commanders thereof with adequate and suitable means for the accomplishing of the assigned task.

The provision of suitable material for the conduct of joint operations is the duty of the War and Navy Departments. In this country, as in most others, little attention has been paid to this

important item. It can hardly be expected that the War and Navy Departments will expend their limited funds for the preparation of such material until there is a demand for it, and there will be no such demand until attempts to cooperate in joint exercises prove conclusively how inadequate is our material.

In 1854 France and England sent a joint expedition into the Baltic to prevent the departure of any Russian ships from the Baltic and to protect Danish and Swedish territory. The force was not properly constituted for the work required of it. Sir W. Clowes explains the lack of success as follows:

> In the first year of the war neither Great Britain nor France was able to employ light-draught steam gunboats, and bomb-and-mortar-vessels, because neither power possessed anything of the sort. Yet such vessels were absolutely requisite for effective operations in the bays and among the islands of the Baltic.

Until the Army and Navy conduct joint operations involving the simulation of landing against opposition under modern conditions, there can be little progress in preparation of material.

The determination of the material required can be made only by practice in doing the job. No amount of theorizing will convince any one in authority to such an extent as will one failure in practice.

If cooperation is to be efficient there must be sufficient practical experience to form a sound judgment as to the material the Navy must acquire to be capable of doing its share in cooperation.

Operations involving the Army and Navy within the theater of operations are of four types:

(1) *Independent operations of the Army and Navy.*

In independent operations there may be cooperation in the assignment of objectives. Cooperation of this type is determined upon by the President and is enunciated in the basic joint operating plans. Joint command is exercised by the President advised by the Joint Board.

(2) *Physical cooperation in large operations.*

Cooperation of this nature requires important strategical decisions and can be effective only by the exercise of joint directive command. A joint commander should be appointed by the President.

(3) *Physical cooperation in operations undertaken with a defi-*

nite minor strategical or tactical objective, within easy communicating distance of a joint superior.

Cooperation of this nature does not require joint command. Directive command is exercised under the principle of paramount interest. Instructions from higher authority should definitely state which branch has the paramount interest in the operation.

(4) *Physical cooperation as a result of circumstances, which has not been planned nor contemplated by instructions. Cooperation of this nature is governed by the principle of paramount interest.*

Physical cooperation of army and navy forces will be required in any of the following types of operations:

(1) Invasion of enemy territory not contiguous to the United States.

(2) Cooperation with an ally not contiguous to the United States; by transporting an army to aid in the defense of its territory or to assist in invading enemy territory.

(3) To seize enemy colonial possessions with a view to forcing the enemy to sue for peace to prevent the loss of such possessions, or with a view to using such colony for trading purposes in the terms of peace, or of requiring the cession of such colonial possession when peace is made.

(4) To protect a colonial possession or allied country from an enemy, or to release it from a sovereignty from which it has rebelled.

(5) To create a diversion requiring the enemy to operate in a theater of war in which he may not be advantageously situated.

(6) To establish a base for further offensive operations.

(7) To destroy an enemy base from which offensive operations of the enemy may be projected.

(8) To assist in the exertion of economic pressure against an enemy by seizing areas from which the enemy obtains raw materials or contraband, or through which such raw materials, contraband, or enemy exports must pass.

(9) To gain command of the sea; the army forcing an enemy fleet to engage in action at sea or suffer destruction from shore batteries.

The next article will discuss operations of the types indicated above, pointing out the general nature of the operations involved, and the relation between the operations required of the Army and Navy.

OPERATION OF A DESTROYER AT FULL POWER

By Lieutenant Commander H. G. Donald, U. S. Navy

THE following notes cover the main features affecting personnel and material when operating a destroyer at full power. The conclusions and recommendations as to operation are based not only on the most interesting table, published with this article, of data and performance of the *Paul Hamilton,* under the command of Lieutenant Commander T. L. McCauley, and the *Farragut,* commanded by Lieutenant Commander John F. McClain, but also on the author's observation of full power trials of destroyers while serving as an engineer member of the Board of Inspection and Survey in 1919 and 1920 and while serving as squadron engineer of the eleventh destroyer squadron in 1923-24.

With reference to the table of full power data, note that the first two reported trials of the *Paul Hamilton* and the first reported trial of the *Farragut* were far from perfect trials, whereas the last two trials of the *Paul Hamilton* and the last trial of the *Farragut* were without penalty. These vessels also made perfect smoke prevention trials at the same time. The data taken on the reported trials of these two vessels (trials were consecutive) were chosen for publication because of the marked improvement made by them solely by standardizing operation on sound engineering principles as discussed in this article.

Taking the items in order as they appear in the table the discussion is as follows: [commanding officers of destroyers would do well to note particularly remarks under (a), (b), (c), (d), (e), (r), and (s).]

(a) *Gallons Fuel on Hand at Beginning of Trial:* The rules require that there be on hand at the beginning of the trial at least 45,000 gallons of fuel. Every effort should be made to reduce the fuel on hand when leaving an anchorage for the trial to 50,000 gallons. If trial is held enroute between ports, delay beginning

trial, if practicable, until the oil on hand is about 47,000 gallons. It requires approximately 25,000 gallons of fuel to warm up to speed for one and one-half hours and conduct the two-hour full power and four-hour stroke prevention trials. A bonus trial requires about 10,000 gallons for one and one-half hours warming up and the one hour at ninety-five per cent of full speed.

The following method of stowing the fuel oil before a trial is recommended. It is believed that, without filling the forward peak tanks and with the after peak tank not over half full, the trim, with this stowage (50,000 gallons oil), will be within two inches of even keel. The stowage provides for an ample amount of oil in "D" and bridge tanks under a good head and stowed so as to practically eliminate the possibility of losing suction when rolling; a small reserve in the after-fireroom wing tanks; and the balance of the oil stowed as far forward as possible in order to improve trim.

D Tanks	*Tank*	*Gallons*	*Sounding*
Lower Group	D-102 Port wing	209	1′ 8″
	D-101 Center	6,089	Full
	D-103 Starboard wing	209	1′ 8″
	Total	6,507	

Cross connection sluice valves and suction to D-102 and 103 closed tightly. Suction to D-101 open.

Upper Group	D-202 Port wing	3,018	4′ 0″
	D-201 Center	2,250	4′ 0″
	D-203 Stbd wing	3,174	4′ 0″
	Total	8,442	

Cross connection sluice valves and deck drain in D-201 open. Deck drains in D-202 and 203 closed tightly.

Total oil in "D" tanks	14,949	
As D-102 and 103 are not to be used, there is available for use	14,531	

B Tanks (fire rooms)

After fire room		
B-109	1,969	2′ 0″
B-110	1,969	2′ 0″
B-111	0	Empty
B-112	0	Empty

For'd fire room: B-107 and 108 empty.

Bridge Tanks

Lower group

Port wing	A-116	482	2′
Center	A-115	4,343	Full
Stbd wing	A-117	335	2′
	Total	5,169	

Cross connection sluice valves and suction to A-116 and 117 closed. Upper suction to A-115 open.

Upper Group

Port wing	A-210	4,010	7′ 4″
Center	A-208	4,401	7′ 4″
Stbd wing	A-209	4,010	7′ 4″
	Total	12,421	

Grand total bridge tanks, 17,681—of this 16,764 is available. (A-116 and 117 not to be used.) Cross connection sluices and deck drain to A-208 open, deck drains to 209 and 210 closed *tight*.

The total oil above is 36,468 gallons.

Place balance of oil on board (at time of getting underway) in A tanks, beginning with A-104, and working aft filling to ninety-five per cent capacity the tanks farthest forward. Note that with A-104, 105 and 106 ninety-five per cent full the total oil on board would be 30,169 gallons, which is just right to leave port.

(b) *Displacement and Displacement Minus Fuel:* All destroyers in this squadron were designed for a displacement of 1,215 tons with ship fully equipped, ready for sea, normal stores, ammunition and fuel (45,000). Due to alterations and stores on board above normal, the average displacement of the vessels of the squadron is 1,450 tons with 45,000 gallons fuel on board, or an increase of about 235 tons above the designed normal displacement. This increase in displacement has reduced the maximum possible speed about 2 knots.

The engineering rules attempt to eliminate the displacement handicap by basing the maximum allowed competitive speed on 30,000 s.h.p. and providing r.p.m. speed curves for each displacement in fifty-ton increments. If the information on which these r.p.m. speed curves for varying displacement were based had been correct, it would not make any difference at what displacement the trial were held. But practice has shown and recent special trials of

the *Brooks* (representing Bath hull) and the *Putnam* (representing Bu C & R hull) (See *Journal American Society of Naval Engineers,* November, 1923) have corroborated the fact that the allowance for increased displacement as given by the engineering performance rules is not nearly sufficient. Therefore, to avoid handicap on displacement, which still, in reality, remains, although reduced, every effort should be made to run as light as possible.

(c) *Trim.*—Owing to the light draft of destroyers, it is necessary in order to obtain satisfactory tip immersion of the propellers, to incline the main shafting to the horizontal in a vertical plane. In destroyers built by the Bethlehem Ship Building Corporation, this angle is considerably greater than in vessels of the war program built by other companies and at navy yards. This inclination of the shafting to the horizontal decreases the efficiency of the propellers, (propulsive coefficient) and increases the s.h.p. per revolution. At full speed, a destroyer of the 1,215 ton class will squat about four feet. Whatever can be done to reduce this "down by the stern" condition will improve the chances of making the required r.p.m. With usual loading of destroyers in this squadron, it has been found possible to obtain a "dead in the water" trim between six inches down by the stern and six inches down by the bow, with only 45,000 gallons of fuel oil on board, forward peak tanks empty, after peak tank three-fourths full. Improvement in trim is practicable only by judicious stowage of fuel oil. Better trim can be obtained if care has been exercised in disposition of dry provisions and ammunition (the tendency is to stow the greater part of ammunition and dry provisions aft). According to the rules, the displacement for which the required r.p.m. are taken is the displacement before getting underway when the trial is made out from an anchorage; or, when the trial is held on runs between ports, it is calculated by subtracting oil expenditure from displacement just before getting underway. The taking of the draft should be supervised by an officer. Note that the draft figures for *displacement* are *Arabic* numerals on bow and *Roman* numerals on quarter. Both port and starboard readings should be taken to correct for list. The *Arabic* numerals aft give the draft of the lower tip of the propellers and are eighteen inches lower than corresponding *Roman* numerals on the quarters. If through neglect the draft marks have been obliterated, the draft may be obtained by taking

the freeboard at the stern and at the bow (base of bull-nose) and calculating as follows (data from C & R General Information Book):

With ship on even keel, loaded to 9′ – 4″ waterline, the freeboard is as follows:

At bow ..... 17′ – 1″
At stern ..... 8′ – 1″

The freeboard as measured should be subtracted from the freeboard 9′ – 4″ water line and the average of the resultant figures added to 9′ – 4″ to obtain mean draft.

Caution: Do not under read the draft. Note on the *Paul Hamilton's* June trial it is quite probable that the draft was *under* read enough to make 100 tons error in displacement.

(d) *Days Out of Dock.*—Fouling of bottom and propellers has a marked effect on ability to make required r.p.m. Whereas the controlling resistance on a destroyer at full speed is the wave making resistance, nevertheless fouling decreases the possible speed, thereby decreasing propulsive coefficient (increasing slip) and increasing s.h.p. per revolution. Fouling of propellers materially increases s.h.p. per r.p.m.

The interval between the dockings of destroyers is set by Bureau of Construction and Repair at not less than nine months and, if practicable to dock, not more than twelve months. The fouling is more rapid the higher the sea temperature, the less the cruising speed and the more the percentage of time spent at anchor. Fouling in certain harbors is very rapid, as at San Diego and in any tropical port. The rate of increase in fouling decreases with time out of dock.

When practicable, one of the two full power trials should be held within fifteen days after docking.

At intervals of not over three months the propellers should be cleaned by divers and examined for cracks and bent tips and every effort should be made to have this done at some time within two weeks before holding a full power or bonus trial.

Placing a seagoing vessel in fresh water for twenty-four hours will undoubtedly kill a great deal of the marine growth. This was successfully done during the summer of 1923 by sending the vessels of 31 and 33 divisions into Lake Washington (Seattle) for

forty-eight hours; they were then eight months out of dock. Passing through the Panama Canal will clean the underwater body to a great extent.

(e) *Gallons Fuel Burned Per Hour.*—The data show that a perfect full power trial should be made burning between 4,000 and 4,800 gallons of oil per hour. Burning more than 5,000 gallons per hour would certainly overload the air supply available with the blowers at rated full speed (as indicated by heavy black smoke), the net result being a reduction in quantity of steam produced and overheating of boiler casing, uptakes and smoke pipes. The oil burned per hour should be kept in mind when choosing oil pressure, tip and plug sizes, and in disposition of oil prior to trial. If the Form "H" score for the trial is less than ninety-five per cent for DD's 296–335 or ninety per cent for DD's 251–295, you may surely look for one or more of the following: low vacuum, excessive steam consumption of auxiliaries, dirty boilers, low boiler steam pressure, or high water level or salinity in boilers.

(f) *Steam Pressure at Boilers.*—To make a 100 per cent full power trial, it is essential that the boiler pressure never drop below 265 pounds gauge, and in fact the pressure should be kept *at* 269 pounds. This requires careful setting of safety valves, and practice in oil control to eliminate fluctuations in boiler pressure. A falling off from the maximum allowed in boiler pressure increases steam consumption of main engines and blowers and makes operation of forced draft blowers at allowed maximum speed difficult without opening overload hand nozzles.

(g) *Steam Pressure on Main Turbine—Steam Chest.*—If the boiler dry pipes or steam line strainers are not fouled, the drop in pressure between boilers and main turbine steam chest should not be greater than five pounds for forward turbine and ten pounds for after turbine with main turbines at full speed. The main throttles must be wide open at all times during the trial. Speeding up or slowing of the turbines and maintaining of the steam pressure must be done, for G.E. turbine installation, by manipulation of the by-pass to the third stage; in the three turbine Fore River Curtis installation by manipulation of both HP turbine hand controlled nozzles and the by-pass valve from HP turbine first stage to the IP turbine steam chest, keeping HP steam chest pressure at maximum; and for Parsons Turbines by controlling

with fifth stage by-pass. Keep the throttles *wide open.* Under no circumstances allow the main steam pressure at the forward engine room to drop below 250 pounds gauge.

(h) *Steam Pressure on Third Stage of G.E. Turbines.*—In order to make a perfect full power trial it is necessary to supply enough steam so that the pressure on third stage will not fall below 230 pounds gauge.

(i) *Steam Pressure on First Stage HP Turbines and Steam Chest of IP Turbine in Fore River Curtis Installation.*—The steam pressure on the first stage of HP turbine must be kept at 115 pounds continuously. This is done by manipulation of last hand controlled nozzle in use, together with the by-pass from HP turbine first stage to IP turbine.

In order to make a perfect trial the steam supply must be sufficient to maintain 250 pounds on HP turbine steam chest with *all* hand controlled nozzles open *wide,* and IP by-pass opened enough to keep first stage of HP turbine *down to but at* 115 pounds gauge.

(j) *Vacuum on Main Condensers.*—Trial data show that a vacuum of 27.1 inches at 100 per cent full speed is excellent on Bethlehem destroyers with injection of 60°-65°F. This was obtained with a thermometer in the exhaust trunk, and while subject to some error is still very much more reliable than readings with the six-inch gauges provided. With an injection of 80° an excellent vacuum would be 26.2 inches at 100 per cent full power. The above remarks apply only to Bethlehem built destroyers, which have no air ejectors and are consequently handicapped by the loss of at least one inch of vacuum at full power under what is possible with the Bath, Cramp, N. Y. Ship or navy yard main condensing plant, which is provided with an air ejector (augmenter).

No one point has more effect on ability to develop 100 per cent of required power than the vacuum in the main condenser. To obtain a good vacuum requires frequent tests for air leaks, constant vigilance in attendance on gland steam; full stroke, tight valves and good packing in air pumps, particularly the dry cylinder, and that the condenser tubes be cleaned on salt water side, particularly those tubes which supercool the air drawn out of the main condenser.

When the injection is higher than 70° F. the coolers on the air pumps should be used. The main air pumps should be operated

FULL POWER TRIAL DATA

ITEM	PAUL HAMILTON				FARRAGUT	
	Date of Trial				Date of Trial	
	Jan. '23	June '23	Aug. '23	Dec. '23	Aug. '23	Dec. '23
Full Power Penalty	1.05	1.75	0.0	0.0	3.14	0.0
Displacement — tons	1553	1377	1485	1418	1459	1467
Gal Fuel on Bd at Beg. trial	56,100	45,900	47,100	45,900	47,400	53,100
Disp. Minus Fuel	1,366	1,224	1,328	1,265	1,301	1,290
Trim inches (B Bow, S Stern)	S 14	S 16	S 6	S 5	B 3	B 4
Days out of dock	5	29	90	2	214	53
Gallons fuel per hour	4,702	4,869	4,750	3,973	5,023	4,314
Rpm Average	427.0	417.7	439.0	438.8	402.1	441.8
Steam Pressure Boilers	255	250	270	270	257	265
Steam Pressure For'd M. Turb St. Chest	240	235	255	255	250	260
Steam Pressure After M. Turb. St. Chest	235	230	250	250	250	260
Steam Pressure For'd M. Turb 3rd Stage	200	190	225	230	200	230
Steam Pressure After M. Turb. 3rd Stage	200	190	235	235	200	230
Vacuum, For'd Main Cond. (Thermo)	27.1	27.1	27.1	27.1	26.8	26.5
Vacuum After Main Cond. (Thermo)	27.1	27.1	27.1	27.1	26.8	26.5
Temperature Injection Cond. (Thermo)	62	58	58	65	54	60
Temperature Overboard Cond. (Thermo)	80	80	90	90	85	85
Temperature Air Pump Discharge	74	74	82	82		72
Temperature Hotwell	90	90	110	110	70	110
Temperature Feed Leaving Heater	170	170	190	195	157	192
Feed Heater Drains led to	M.Cond	Hotwell	Hotwell	Hotwell	Hotwell	Aux.Cond
Generator exhausting to	AuxEx	AuxEx	AuxEx	AuxEx	AuxCond	AuxCond
Pressure on Auxiliary Exh.	16	16	16	16	15	14
Fuel Oil, Pressure at Burners	300	300	290	295	275	300
Fuel Oil Temperature to Heater	95	110	130	130	125	119
Fuel Oil Temperature From Heat	150	160	190	190	160	171
Tips 3/32 with 1/16x3/64" plugs	4	2	6	8	4 to 2	12
Tips 7/64 with 1/16x3/64" plugs	8	10	6	4	8 to 10	0
Air Pressure in FR's	6	7.5	8	7.0	7.0	7.0
Smoke	MedBlk	HvyBlk	DkBrn	DkBrwn	HvyBlk	LtHze
Sea, condition & Dir	SmAhd	SmAhd	Sm.P.S	Sm.Ahd	Sm.P.S	HvySwlsAhd
Wind, Force and direction	Mod.Bw	Fresh Ahead & Bow	Calm	Mod. P.Bw	Calm	Calm

P. S. is Puget Sound.
Steam pressures in pounds per square inch gauge. Temperatures in degrees Fahrenheit.

with wide open throttles (full stroke) on full power trials and the cross connections between the two systems should be opened.

(k) *Temperature of Injection, Overboard Discharge and Air Pump Discharge.*—If the temperature of the injection is over 65°F. the overboard discharge valve should be wide open to permit full flow, if less than 65°, so adjust the overboard discharge valve (i.e., starting from full open and gradually closing it and noting temperature of exhaust trunk, air pump discharge and overboard discharge) that one has the highest *air pump* discharge temperature possible *without suffering a dimunition in the vacuum* on main condenser (increase in exhaust trunk temperature). One will find this procedure well worth while because of the increase made in the hot well temperature. This practice is, of course, permissible with an injection *greater* than 65°, but it is most probable that, with 65° plus injection, air leakage is so great that it will not be possible materially to choke off the circulating water *without* an immediate increase in exhaust trunk temperature. If the air pump discharge temperature is more than 5° below the temperature of the exhaust trunk and any choking off of circulating water increases the temperature of the exhaust trunk, one may be certain that the dry cylinder of the main air pump is overloaded. In this case, the only way to improve vacuum is to stop more of the existing air leaks.

As to the overboard discharge temperature, note this frequently enough to catch any high abnormal increases (if this occurs you have picked up kelp, a big pocket of air, or possibly the air vent on condenser heads may have become clogged) but make it the rule to regulate the overboard discharge valve having regard solely for increases in air pump discharge temperature *without* an increase in exhaust trunk temperature.

With an injection below 65°, one should be able to obtain an 85° air pump discharge without suffering a loss in vacuum below that possible with the Bethlehem main condensing plant at full power (twenty-seven inches in exhaust trunk). This would be a plant with very few air leaks.

(l) *Temperature of Hot Well.*—This varies primarily with the air pump discharge. It should be made as high as possible while obtaining best vacuum but not over 140° at full power. All steam line drains and the feed water heater drain should be led to the

hot well. Further to increase the temperature, run auxiliary exhaust through the evaporator coils with coil drains wide open (blowing through) and water in shell of evaporator about two inches above bottom nut on shell gauge glass. With air pump discharge of 85°, it should be possible to obtain 115° in the hot well.

Always take suction on main feed pumps from the hot well, and *not* from C-101 (reserve feed tank). The auxiliary feed pump *must* be kept ready for instant use on a full power trial. Have these pumps on the *direct suction* (five inch line) to C-101. Have them turning over slowly (three double strokes per minute) and if sufficient make up feed is not obtained in this way speed up one of them. This is the proper way to make up feed on full power. C-101 should be heated to 120° before the full power trial.

(m) *Temperature of Feed Leaving Heaters, Back Pressure and Feed Heater Drains.*—Keep auxiliary exhaust pressure (back pressure) right up to fifteen pounds gauge. Note that the relief valves on the forced draft blowers turbine casings should be set to lift at twenty pounds gauge.

Drain the heaters to the hot well with drain valves wide open at heater and hot well. Heaters in Bethlehem destroyers are not equipped with proper and necessary means of bleeding off air, either from steam side or water side.

Bleeding the air from the steam side is essential to obtain maximum heater efficiency. Bleeding the air from the water side will improve the vacuum on the main condenser. To bleed the air from steam side, run a one inch connection from *bottom* of the gauge glass fitting on side of heater to the hot well, keeping valves on this line full open whenever heater is in use. To bleed the air from water side, braze a boss on the *highest* point of the feed discharge line leaving the heater and run a one-fourth inch line (or if larger line is used put a one-fourth inch orifice) to the line bleeding air from steam side. This installation is simple and will be of material benefit at all speeds.

It is noted from the data on enclosure that one may expect a 192° feed leaving heater with a fifteen pound back pressure and hot well at 110°. Many ships complain of the inadequacy of the feed heaters. They are very satisfactory if properly operated.

(n) *Feed Heater, High Pressure and Low Pressure Drains.*—These should be led to hot well. The feed heater drain should

be opened wide open and no attempt made to keep a seal on the heater. All turbine drains should be kept closed except the drain from the exhaust end of the last turbine in series, which should never be closed.

(o) *Generator Turbine Exhaust.*—This should preferably be led to auxiliary exhaust line unless there is particular trouble with generator turbine shaft steam seal glands leaking badly when operating on back pressure, but when in good condition the glands will not leak. If the generator exhaust is led to main condenser direct there is sure to be an impairment in vacuum, such as to increase the steam consumption of the main turbines for given power much more than the decrease in steam consumption of the generator. If absolutely necessary to operate the generator condensing send its exhaust to auxiliary condenser.

(p) *Pressure on Auxiliary Exhaust (Back Pressure).*—Keep this at fifteen pounds gauge (the maximum allowed when operating turbine driven auxiliaries). See that all turbine driven auxiliaries have relief valves set at twenty pounds gauge.

(q) *Fuel Oil Pressure, Temperature and Tip and Plug Size.*—Very satisfactory atomization can be obtained at 200 pounds gauge at burners, there being practically no improvement with higher pressures. As the choice of atomizer tips and plugs is limited, it will be necessary to use a pressure higher than 200 pounds in order to burn the amount of oil required to make full power; therefore with tip and plug size chosen, adjust pressure accordingly, but the limit set by the rules is 300 pounds gauge at the boiler front.

As all burners are under the same air pressure and as adjustment of register vanes is impracticable it goes without saying that tip and plug size on all burners should be the same in order to burn oil at the same rate in each burner. If all the oil necessary to make 100 per cent trial can be burned without exceeding the 300 pounds limit with 3/32 tips (Bureau standard) and 1/16 x 3/32 plugs use this size. However, if this size will not burn a sufficient quantity of oil at 300 pounds pressure, the next higher combustion rate would be given by 7/64 tips with 1/16 x 3/32 plugs. Do not mix 7/64 and 3/32 tips even though some ships have done it and made perfect trials. Do not use 7/64″ tips on two boilers and 3/32″ tips on the other boilers, but keep the load on all boilers the same. The 1/16 x 1/16″ plug is not recommended for any size

tip. It will flood the 3/32″ tip giving poor spray at any pressure and too wide a cone angle. The oil temperature should be such as to reduce the viscosity of the oil to 150 seconds Saybolt Universal (4° Engler). If the temperature to produce this viscosity is not known, and the Baumé gravity is eighteen or over it is safe to use a temperature 10° below flash point, provided the oil is not what is known as a blend. Blended oils are very irregular in viscosity and flash point characteristics. Another rough method of determining proper temperature of an oil for burning, which must be done before a trial, is to burn it first at flash temperature, air adjusted to give light haze, then reduce temperature of the oil 10° at a time noting when spray begins to get poor, then use temperature 10° above this point. If the oil is heated so as to reduce viscosity below 100 seconds Saybolt Universal (about 2½° Engler), there will be a marked reduction in capacity of the tips and panting may occur if the heating has increased the oil temperature beyond the flash point.

One important point, especially in view of the meager oil data given destroyers by tankers or oil contractors, is to use on a trial only one delivery of oil. The chief engineer should foresee this at least one oiling in advance of a trial. It is well to state that oils received from different tanker cargoes should never be mixed, except possibly to produce a blend of a light oil with a heavy oil in order to lower the viscosity curve of a heavy oil. If this is done the mixing should be thoroughly done by pumping the oil from tank to tank several times. Too little attention has been given in advance of a trial to obtaining data on the proper temperature at which to burn the oil to be used on the trial.

(r) *Air Pressure in Firerooms and Smoke.*—The air pressure should be equalized between fire rooms at full power. This can usually be done by leaving the louvers open in the air lock doors. This would not endanger water tight integrity of ships nor be a source of danger in case of explosion in one fire room. Air pressure gauges should be used. Too frequently they are allowed to get in poor condition. The amount of air should be that sufficient to give a light haze smoke, but if sufficient steam to make a 100 per cent run cannot be generated with blowers running at allowed maximum speed do not burn more oil than will give a *light* brown. Any further darkening of the smoke means material re-

duction in efficiency of combustion (CO present) rapid fouling of fire side of boiler tubes, and, if smoke gets black, overheating of boiler casing uptakes and smoke pipes will result. The commanding officer can and should observe this carefully from the bridge.

Check the operation of the blowers on deck often, noting if each is pulling well. Frequently one blower will be allowed to slow and lose suction without detection by fire room personnel.

When making smoke prevention trial, if practicable, keep the apparent wind forward of the beam, and the umpire will be less likely to call penalties as any smoke made will dissipate more quickly. Usually an umpire considers smokeless operation that which does not have a smoke trail over 100 feet long.

(s) *Sea and Wind, Conditions and Direction.*—If practicable, work up for a trial with sea forward of beam and turn when ready to start trial so as to bring sea on quarter. No comment on wind is necessary except as noted in (r) above, when running smoke prevention trial. Steering should be done by the chief quartermaster and, except in bad weather or to avoid danger, the helm used should not be over 2°, except on turn 5° and the ship should be allowed to swing about 5° either side of course.

(t) Although not required by the rules at least one preliminary trial of one-half hour at full speed and one-half hour smoke prevention are necessary in order both to train personnel (not excepting the commanding officer and engineer officer) and to test material, particularly blowers for speed, main engines for bearing trouble and main condensing plant for vacuum. Too often engineer officers consider because they have an excellent vacuum at low power that it will be good at full power. The vibration at full power is apt to open joints and loosen bolts that do not show up at moderate power and if this occurred on full power the trial would be a failure. A short preliminary trial allows one practically to eliminate the possibility of having these troubles.

MOROCCO — A DIPLOMATIC COMPLEX

By Lieutenant Commander Lucius C. Dunn, U. S. Navy

CONTRARY to prevailing popular belief the World War did not have its beginning at Sarajevo. It is true that the assassination of the Austrian Archduke Franz Ferdinand, the heir to the Austrian throne, and his wife in that quaint little Bosnian city in June, 1914, was the fulminating cap which detonated the European powder magazines. It is likewise true that for years certain European nations had been preparing for the war which was to sweep across that continent like a loathful scourge, but the actual *casus belli* was far more deep-seated than the now famous Austro-Hungarian ultimatum delivered to Serbia. To discover the true genesis of the war we must dig deeper than that. We must even look across the Mediterranean to another continent—the dark continent, for there it was that the first war clouds gathered.

It is, moreover, a curious run of circumstances that the African continent has either directly or indirectly served as the rooting-ground for germinating many other wars and national crises of recorded history, among which witness the various conquests in Egypt, the Punic Wars, the Boer War, the Italian expeditions in Tripoli, the French colonial skirmishes in North Africa, and not the least among these our own Civil War—for did not the people for whose emancipation that war was fought originally come from Africa? Even the recent Spanish crisis which culminated in establishing a dictator over that country came about in part over the question of policy to be adopted in suppressing the Moorish uprisings in an around the Melilla district of Spanish Morocco.

But to return to the World War. As we shall later see, the first dark clouds of that war gathered on the horizon of that degenerated and extremely backward country of Morocco, and it is that rainbow-hued country which forms the subject of this article.

For centuries European diplomatic eyes have been focused upon

that sadly neglected land of the Sultan. Out of certain negotiations entered into between France and Great Britain over Moroccan affairs was born the Entente Cordiale. Even the United States with her traditional policy of "no entangling alliances" has, with certain definite reservations, entered into one international convention and one international conference dealing specifically with Moroccan affairs. But more about that later.

A brief panoramic view of the checkered and hectic history of Morocco will first be given in order to develop a proper background for the study of that country and its relation to certain events leading up to the World War. The earliest traces of Moroccan history indicate that the country was first inhabited by aboriginal Berber tribes; then came the Phoenicians who were the first civilized peoples of record to set foot on Moroccan soil and to cross the trails of its indigenous Berbers. This occurred about a dozen centuries before the birth of Christ. Those sturdy old seadogs—the ancient mariners who first gave seaborne commerce to the world—sailed out into the classical Mediterranean, leaving their native cities of Tyre and Sidon far astern, and steered a general westerly course by keeping Polaris bearing on the starboard beams of the ships which they had hewn out of the cedars of Lebanon. This brought them upon the northern coast of Africa where, in keeping with their mercenary instincts, they established trading posts at Carthage and elsewhere.

Later, when Carthage had become a flourishing city, intensive commercial contact was established between the traders from that city and the Berber tribes who inhabited the north and west coasts of Morocco, and in time, these Carthaginian traders came to exert a considerable degree of influence upon the nomadic population. Owing to the fact that the rugged Riffian chain which extends diagonally along the northern coast was inhabited by savage tribes of Berbers, an effective barrier was thus rendered against infiltration of the interior country by the traders from the east, and in consequence their sphere of influence was confined largely to the coastal regions of Morocco. Further to the southward, however, copious penetration of the interior country was effected by them, since the country bordering upon the Atlantic seaboard in that locality is relatively low and permits of comparatively easy access to the adjacent hinterland.

As time went on Carthaginian colonies sprang up all along the

ALGERIA
MEDITERRANEAN
SPAIN
Oudjda
Melilla
Figig
Tetuan
Wezzan
Larache
Tangier
Gibraltar
Ceuta
Taza
FEZ
Mequinez
Salee
Rabat
Casablanca
Boujad
Mazaghan
Saffi
Mogador
Agadir
MOROCCO
THE DESERT
ATLANTIC

northern and western coasts of Morocco, notably at Melilla, Tangier, Larache, Sale and Casablanca. Some of those ports served as bases for the splendidly equipped and well manned war galleys of the Carthaginian Navy, as they patrolled the western Mediterranean. Out of those ports also sailed that fine fleet when it went forth to give battle to the Roman Fleet in the First Punic War, which marked the beginning of the decline of Phoenician sea power.

Later, under those same African skies, was born Hannibal, with his dreams of conquest which were destined to lead him across the Mediterranean into Spain for his famous march across the Pyrenees, down through Gaul, and over the Alps into Italy to engage the Romans on their own soil. Accompanying Hannibal on this march were thousands of African natives, including the fearless Numidian cavalry now famous in history. An interesting sequel to that event is presented when we consider those other hundreds of thousands of native troops which were poured into France from her North African colonies in order to stem the tide of the German advance in those critical days of the World War. Moreover, the potential value of France's present reservoir of man-power in North Africa is markedly emphasized when one considers that in her last national emergency she was able to hurl into the balance against the Germans over 1,000,000 men chosen from her colonies on that continent, or about one half the total number of men sent across the Atlantic to France by the United States during that war.

Following Hannibal's exit from Europe came the end of the Second Punic War, and the consequent passing to the Romans of the supremacy of the western Mediterranean.

After the destruction of Carthage by the Romans, in 146 B. C.—the climax of the Third Punic War—the Romans set up a protectorate over the entire Carthaginian territory in Africa, the westernmost section of which was known as Mauretania and included what is now Morocco, representing the extreme western limits of the Roman Empire. Roman civilization spread rapidly throughout this region, and the city of Volubilis was established in the vicinity of what is now Fez, the present capital of Morocco. The Roman ruins of Volubilis rank in importance with several other such historical landmarks in North Africa and constitute one of the interesting sights to be seen by the constantly increasing number of tourists who annually visit that land.

Another interesting sequel of this country's history brought down to modern times is that just as in its heyday of Roman influence the fertile fields became the granaries of Rome, so today those same fields, swept by the warm winds from the Sahara, have becomes the granaries of the French Republic. At present the cereal crops in French North Africa yield annually about 4,000,000 tons of wheat, barley and oats, and with improved methods of cultivation and irrigation now being rapidly instituted the outlook is promising for a very material increase in the future.

In the fifth century Morocco became subjected to the rule of the Vandals, continuing thus until about 618, when the control passed to the Goths. In 682 came the Arabs, and in 702 an Islamic expedition coming from beyond the Nile and consisting of hordes of bernoused and turbaned Arabs and Egyptians poured into the country and gained entire control of the region bordering upon the Straits of Gibraltar. Indeed, this flood tide of Islamic invasion was of such magnitude as to spread across the straits and saturate to a considerable degree the Iberian peninsula—now modern Spain. With them came the crescent-emblazoned banner of the Prophet, the Koran, and the sword, and their crossing the straits and setting foot on European soil, at Tarifa, was epochal, as it marked the beginning of the struggle which was to result in the 800 years' ascendancy of the Crescent over the Cross on the plains of Andalusia. It was during this era also that Charles Martel immortalized himself in the eyes of the Christian world when at Tours, in 732, he checked this Islamic tide which was setting in across Europe from the southwest, and forced the Crescent back across the Pyrenees.

Recorded history of the Moorish Empire in Morocco commences with the settlement near the Roman ruins of Volubilis in 788 A. D. Then followed a succession of Islamic wars and consequent changes of dynasties until the zenith of Moorish influence and power was reached at the close of the twelfth century. At that time the Moorish Empire extended to the very western frontiers of Egypt and comprised what is now Morocco, Algeria, Tunisia, and Tripoli.

Commencing about the middle of the fourteenth century the empire began to disintegrate from within through disputes brought about among rival dynastic claimants. Early in the fifteenth century the Portuguese effected a foothold on the Moroccan coast

when the port of Ceuta—the African Pillar of Hercules—which is directly opposite Gibraltar, was occupied, and a little more than fifty years later the interesting and colorful city of Tangier passed under the rule of the Portuguese flag; inasmuch as that city has played—and is still playing—a very important part in the modern history of Morocco, and especially with regard to her international relations, a few brief historical notes are of timely interest.

Although originally occupied by the Portuguese in 1471, Tangier passed under Spanish rule in 1580, and was again occupied by the Portuguese in 1656. In 1662 it passed into the possession of the British through being a part of the dowry of Catherine of Braganza, the infanta of Portugal, upon her marriage to Charles II. Owing, however, to the strenuous and constant insurrections and other desultory operations persisted in against the British at Tangier by the Moors of that region, the bride's wedding present to the groom turned out to be a vicious nest of hornets instead of a commercial cozy-corner in Morocco, so, for reasons of economy, the British, in 1664, packed up bag and baggage and evacuated the city, leaving it to the mercies of the closely following Moors. History records that this evacuation proved to be a thrilling affair and bore none of the friendly ear-marks of a Sunday School picnic. Since that time Tangier has remained in the possession of His Shereefian Majesty, the Sultan of Morocco. The Act of Algeciras, which practically internationalized Tangier, will be mentioned in some detail later.

Following the Portuguese capture of Tangier came the Spanish capture of the port of Melilla, which event occurred just two years before Columbus discovered America. Since that time, moreover, Spain has been practically constantly engaged in armed conflict with the Moors over this Riffian district. It is still going on, and, as before stated, was one of the prime causes which brought about the recent overthrow of the Spanish Government, and which prompted King Alfonso XIII to proclaim Primo de Rivera as dictator over that country. It is here of passing interest to note that the military dictator himself served with distinction in the Spanish campaign in Morocco in the early '90's, a very high decoration having been subsequently conferred upon him by his government for bravery in that campaign.

In the closing years of the fifteenth century, during the reign of

Ferdinand and Isabella, the Moors were driven out of their last stronghold in Spain, Granada, and were forced back across the Straits of Gibraltar into Morocco.

Early in the sixteenth century steps were taken by the Sultan of Morocco to establish friendly commercial relations with the countries of western Europe. Trade contact with Great Britain was accordingly arranged through Queen Elizabeth. Similar relations with France soon followed, whereupon that country appointed a consul to Morocco. Great Britain's consul to the land of the Moors was not appointed, however, until a century later.

In connection with the subject of Morocco's commercial aspirations it is of interest to observe that although bordering upon two of the most important waters on the globe—indeed, veritably fronting on the world's oldest and richest seaborne trade route through the Mediterranean—that country, since the advent of Moorish influence, has never possessed a navy. Of course, as has previously been pointed out, the ancient Phoenicians possessed a superb navy when they controlled this country and prior to the destruction of Carthage, but Morocco of the Moors has never boasted of sea power, and to that fact, it is believed, may be attributed in large measure the apathetic and atrophic standing to which that country has been relegated in the realms of international affairs. The nearest approach to a navy were the semi-organized bands of pirates who infested the Barbary Coast and who at times were fitted out and equipped for their piratical excursions against the civilized world by the states to whom they owed allegiance and to whom their loot and prizes were tendered. Their vessels comprised an assortment of almost every known type of craft and rig of the day and varied greatly from time to time in number and size. Tangier was one of the rendezvous from which they operated. The activities of these seafaring brigands began in the sixteenth century, attained their maximum degree of success a century later, gradually declined during the eighteenth century, and were completely suppressed early in the nineteenth century.

It was during the latter period, 1801-05 and 1815, that the United States Navy was actively engaged in operations against these Barbary pirates, and it was during this time also that some of the most brilliant and gallant pages in the history of our naval service were written, while our fleet was engaged in protecting our

merchant ships from those marauding desperadoes of the sea. The names of Decatur, Bainbridge, Preble and Truxtun will ever stand out as living memorials to the honor of our Navy—names made famous through valiant deeds of "iron men in wooden ships"! The burning of the *Philadelphia* in the harbor of Tripoli is an outstanding example of the performance of our Navy of those days, an exploit which for enterprise and daring has not been surpassed, even down to the present day. The Tripoli monument on the U. S. Naval Academy lawn at Annapolis bears silent but impressive tribute to the brave officers and men of the United States Navy who lost their lives in desperate hand to hand encounters with some of those pirates during the Tripolitan War.

Aside from the fact that in the early years of the nineteenth century Morocco had been compelled by the European powers to suppress piracy and the traffic in Christian slaves, that country had undergone a period of about a thousand years of practical isolation from the influence of western civilization, save, indeed, for the sparse European occupations which took place from time to time in certain restricted areas on her northern coast.

But one fine morning in 1830 the Sultan awoke to discover one of the foremost European powers energetically engaged in occupying the adjacent territory directly to the eastward of the land of His Shereefian Majesty, this having been precipitated as a result of the now famous blow inflicted by the Dey of Algeria upon the French consul to Algiers. The consequent bombardment of that city by the French fleet and the flight of the Dey marked the beginning of French influence in North Africa, which in time was destined to result in the tri-colored banner of that republic flying from flagstaffs across the whole of Northwest Africa, thus fulfilling the prophetic dreams and cherished hopes of her prolific author, Prévost-Paradol, and representing the achievement of her statesman and colonial builder, Jules Ferry.

The Sultan of Morocco was at first pleased with the French conquest of Algeria, as the Dey of that country, being a Turk, was his traditional enemy, but as the conquest progressed, and as the boundary line between Morocco and Algeria had never been definitely established, continual disputes arose over this boundary, and France soon found herself also engaged in armed conflict with the wild Moroccan tribes who dwelt along that border and who made desultory raids into Algerian territory.

Although Algeria was declared French territory in 1848, France was absorbed in the pacification of that country until the outbreak of the Franco-Prussian war, 1870, which date still found France and Morocco engaged in disputes incident to the hostile attitude persisted in by the tribes who dwelt along the above mentioned boundary line. Furthermore, having been born and bred in an atmosphere charged with tyranny and intrigue, it was not the way of Sultans to be at peace with anybody for long, not even among their own families and tribes; and thus it was that the Hassanian Dynasty—the branch to which belonged the Sultan of that day and which extends down to the present incumbent—found itself perpetuating the cycle of turmoil, torpid administration and internecine strife which had been characteristic of its predecessors for ages back.

However, the inglorious record of the Hassanian Dynasty was in a measure redeemed through the appearance upon the scene in 1873 of an able Sultan, Moulay-el-Hassan, the father of the present one, Moulay Youssef, who proved to be both a capable leader and an energetic administrator. He asserted his authority throughout the empire and suppressed many rebellious tribes, as indicating the conciliatory attitude adopted toward European countries and the trend of his mind along modern lines. A resident representative of the German Government was received in the court at Fez in 1873, and in 1877 France was requested to detail a permanent military mission to Morocco to assist in reorganizing and modernizing the armies of the country. It was during his reign that Morocco made her initial appearance upon the stage of modern international affairs, as notably evidenced by the calling of the Madrid Convention in 1880, over affairs in Morocco. As previously pointed out the United States was a party to this convention, the other powers represented being Germany, Austria-Hungary, Belgium, Denmark, Spain, France, Great Britain, Italy, Holland, Portugal, Sweden and Norway, and Morocco.

Previous to calling of the Madrid Convention practically the only powers actively contending for spheres of influence in Morocco were France and England, and, up to that time, those two countries, accordingly, were the only ones enjoying the privileges of "most favored nation treatment" in their commercial intercourse with the Sultan. But this was changed as a result of this

convention and as outlined in the following article quoted therefrom: "The right to the treatment of the most favored nation is recognized by Morocco as belonging to all the powers represented at the Madrid conference." In addition to equalizing the terms for conducting international trade with Morocco this convention also established a fixed and uniform basis for exercising the right of protection for certain personnel employed by the accredited diplomatic agents of the various powers, as well as the right for foreigners to hold property in Morocco. This convention, which had far reaching effect with reference to Moroccan affairs in general, was concluded at Madrid on July 3, 1880, favorably acted upon by the United States Senate on May 5, 1881, ratified by President Arthur on May 10 and proclaimed December 21 of the same year.

The next ten years of Moroccan history following the Madrid Convention were outwardly—this word is used advisedly—uneventful from an international point of view, although with the increase of commercial privileges came a corresponding increase in political activity among the rival European powers. In the meantime, however, France found it necessary to occupy Tunisia in order to "protect the eastern border of Algeria." The old saying that after France had effected successful conquest of Algeria one eye of the republic was fixed upon Tunisia and the other upon Morocco seems to have been amply proven by subsequent events. It is of incidental interest here to observe that the French seizure of Tunisia, in 1881, followed by her establishing a protectorate over that country, proved distasteful to Italy and may be said in a large measure to have caused her to join hands with Germany and Austria-Hungary in the Triple Alliance of 1883.

The Sultan sent an embassy to Berlin in 1889, and during the following year Germany negotiated a five-year commercial treaty with the Moorish Government. A British mission was dispatched to Fez in 1891 for the purpose of negotiating a commercial treaty, but, after much backing-and-filling on the part of the Sultan, this mission failed of achieving its aim. Fez was fast becoming a center of conflicting "spheres of influence." As in previous years, French and British interest in Moroccan affairs predominated during this decade, the envoys of those countries being the most active in their contact with the court at Fez; this interest was,

moreover, due in part to the keen rivalries existing between those countries over their respective spheres of influence in Egypt, and also to the fact that preponderance in Mediterranean seapower was confined to those two powers, a fact which should not be overlooked in a study of this subject. At that time French seapower alone was equal to, if, indeed, it did not exceed, the combined naval strengths of the powers constituting the Triple Alliance.

But the main contributory factors to British and French interest in Morocco proper may be broadly classed as commercial and strategic; and a brief analysis of those factors is of pertinent interest at this point.

As viewed from the British angle her commercial interests in Morocco were of considerable importance and justified such action as would insure an open door for her own trade, as well as for her merchants to pursue unhampered reciprocal trade relations with the Moorish Government. The broader aspect of the case, however, lay in the strategic. In fact, consistent with conditions which obtained in the Mediterranean at that time, her national interest demanded a policy which would preserve either an independent Morocco or a neutral zone along the northern coast adjacent to the Atlantic and bordering upon the Mediterranean opposite and in close proximity to Gibraltar. She could not afford to jeopardize her right to free and unobstructed access to the Mediterranean, via the Straits of Gibraltar, by allowing a strong military power to obtain entire control of Morocco. In short, British trade routes through Suez to India and the Far East, and her other interests in the Mediterranean and the Black Sea, constituted the keystone of the arch of her concern in Moroccan affairs, and she is governed by the identical policy even to this day.

Now, turning to the French policy respecting Morocco, it is obvious that, France having definitely established herself on the southern shores of the Mediterranean, in Algeria and Tunisia, her commercial interests in that sea assumed considerable proportions. Moreover, since England had securely established herself at Gibraltar, and thus controlled one side of the straits, it was manifestly of special importance to successful commercial exploitation of her North African colonies that France should be assured of free access to the Atlantic, either by an independent Morocco or

by French domination in that country. Furthermore, the strategic element with respect to her security in Algeria demanded special attention, as a study of the topography along the Algerian-Moroccan boundary will clearly indicate—a conflict in that quarter would resolve itself into a "down-hill" fight for the Moroccans and an "up-hill" fight for the Algerians. In other words, the rugged nature of the country in that vicinity is such as to make it imperative that France should insist either upon domination in Moroccan affairs or else insure that a spirit of friendliness for her would obtain in that country, if the Algerian frontier was to be made secure against disastrous attack from the Moroccan side. The whole plan of French colonization in North Africa, indeed, her whole endeavor on that continent, today revolves around the above outlined policy as a fixed center, and, as will later be shown, the formation of the Entente Cordiale, with England, and the allied victory in the World War have materially contributed further to crystallize this policy for her; in fact, it may be said that this policy now constitutes one of her major national commitments.

The closing years of the nineteenth century found both Germany and Spain manifesting increased interest in Moroccan affairs. Also, coincident with this German interest—indeed, one of its contributory factors—there was being generated in Germany an ardent desire to become one of the world's great sea powers, as presaged by the laws passed in 1897-98 laying the foundation for that powerful fleet which was destined to come to such an inglorious end at Scapa Flow.

As for Spain, although her interests in Morocco at this time were comparatively meager, being confined almost entirely to her possessions around the Melilla-Ceuta district on the Mediterranean and that of the Rio de Oro on the Atlantic side, she nevertheless was to become a pivotal point in a cycle of events which, in a few years, was to end the eleven centuries of absolute Moorish sovereignty in Morocco. The death of the Sultan, Moulay-el-Hassan, also occurred during this decade, in 1894, and his favorite son, Abdul Aziz, then only sixteen years of age, was proclaimed Sultan at Rabat, the burial place of his father.

The dawn of the twentieth century witnessed the Franco-Moorish tension rapidly approaching the breaking point owing to the increasingly recurrent raids carried into Algerian territory by

the rebellious Moroccan tribes who dwelt along that frontier. In order to discourage and counteract those raids France, in 1901, found it both necessary and expedient to put forth her strong right arm and annex certain strategically located Moorish oases in the immediate region of the Algerian border; although the territory thus annexed was relatively small, it registered the first phase of French "peaceful penetration" into Morocco. No formal opposition was voiced by European powers. Italy had already been appeased for the French occupation of Tunisia and the establishing of a French naval base at Bizerta, by the Franco-Italian Agreement of 1900, in which Italy obtained France's sanction for the former to exercise an unrestricted hand in Tripoli. England was absorbed in the Boer War which was then in progress, and the dual alliance between France and Russia acted as a restraining influence upon Germany.

In 1902 France took the next step in extending her sphere of influence in Morocco by attempting to negotiate a secret treaty with Spain having for its purpose the parceling out of Moroccan territory between those two powers. England, having been apprised of this, interposed her objections, and the outcome of it all was that a crisis was brought about in the Spanish Cabinet and the treaty failed of ratification by that country.

Meanwhile, conditions in Morocco were fast going from bad to worse. History was again repeating itself in that the vicious strife then prevalent among the various tribes and factions was disrupting the administrative stability of the country. Sultan Abdul Aziz had inherited but little, if any, of the administrative and executive ability of his father, Moulay-el-Hassan, and, as a crowning event to this chaos, Abdul Aziz became entangled in the fly-paper of European loan markets in the latter part of 1902. Indeed, this turned out to be for Morocco a veritable "financial tanglefoot age," which was not only to prove responsible in a large degree for the eventual downfall of Abdul Aziz, but was destined to cut into the very heart of the sovereignty of his country. Although Abdul Aziz made desperate efforts to levy and collect his taxes in order to retrieve himself from this difficult situation, it was not unlike trying to lift himself by his bootstraps from this quagmire of financial depression, and ere long the European powers, principally France, began to foreclose upon the Sultan by virtually taking over

control of Moroccan customs as collateral for the loans advanced to him. Thus the condition of Morocco was on the verge of a crisis.

We now approach the crux of this article. It is the year 1904. At that time the "Big Five" European powers were, in accordance with the "balance of power" doctrine, divided into two distinct political groups—the Triple Alliance and the Dual Alliance; but, owing to the phenomenal development during the last decade of Germany, not alone as a staunch commercial rival but as a formidable military power as well, both on land and sea, that political equilibrium was being seriously deranged. Accordingly, England had come to realize that isolation from European affairs was no longer to her best interests. Indeed, as far back as 1899 she had indicated her willingness to assist in bringing about an Anglo-German alliance. But that was not to be, so she later chose to enter an alliance with one of the parties to the Dual Alliance, France. One of the chief issues upon which was based this Franco-British rapprochement grew out of the conjoint attitudes assumed by those two powers over Moroccan affairs. As has previously been pointed out, both France and England were vitally interested in Morocco. Also, for many years, those two powers had held conflicting interests in other parts of the world, notably in Egypt, Siam and Madagascar. The Moroccan question became the common ground upon which they met to compose their differences and to effect an alliance.

The negotiations leading up to this agreement were concluded in April, 1904, when M. Delcassé and Lord Lansdowne, the respective French and British Foreign Ministers, affixed their signatures to the document. Thus was born the now famous Entente Cordiale. The following extracts, which are pertinent to the subject of this article, are quoted from certain declarations contained in the above historic agreement:

> His Britannic Majesty's Government declare that they have no intention of altering the political status of Egypt. . . . The government of the French Republic declare that they have no intention of altering the political status of Morocco. . . . His Britannic Majesty's Government, for their part recognize that it appertains to France, more particularly as a power whose dominions are conterminous for a great distance with those of Morocco, to preserve order in that country, and to provide assistance for the purpose of all administrative, economic, financial, and military reforms which it may

require. They declare that they will not obstruct any action taken by France for this purpose, provided that such action shall leave intact the rights which Great Britain, in virtue of treaties, conventions, and usage, enjoys in Morocco, including the right of coasting trade between the ports of Morocco, enjoyed by British vessels since 1901. . . . The two governments, being equally attached to the principle of commercial liberty both in Egypt and Morocco, declare that they will not, in those two countries, countenance any inequality either in the imposition of customs duties or other taxes, or of railway transport charges. The trade of both nations with Morocco and with Egypt shall enjoy the same treatment in transit through the French and British possessions in Africa. An agreement between the two governments shall settle the conditions of such transit and shall settle the ports of entry. This mutual engagement shall be binding for a period of thirty years. Unless this stipulation is expressly denounced at least one year in advance, the period shall be extended for five years at a time. Nevertheless, the government of the French Republic reserve to themselves in Morocco, and His Britannic Majesty's Government reserve to themselves in Egypt, the right to see that the concessions for roads, railways, ports, etc., are only granted on such conditions as will maintain intact the authority of the state over these great undertakings of public interest. . . . In order to insure the free passage of the Suez Canal, His Britannic Majesty's Government declare that they adhere to the stipulations of the Treaty of October 29, 1888, and that they agree to their being put in force. The free passage of the Canal being thus guaranteed, the execution of the last sentence of paragraph 1 as well as of paragraph 2 of Article VIII of that Treaty will remain in abeyance. . . . In order to secure the free passage of the Straits of Gibraltar, the two governments agree not to permit the erection of any fortification or strategic works on that portion of the coast of Morocco comprised between, but not including, Melilla and the heights which command the right bank of the River Sebou. This condition does not, however, apply to the places at present in the occupation of Spain on the Moorish coast of the Mediterranean. . . . The two governments, inspired by their feeling of sincere friendship for Spain, take into special consideration the interests which that country derives from her geographical position and from her territorial possessions on the Moorish Coast of the Mediterranean. . . . In regard to these interests the French Government will come to an understanding with the Spanish Government. The agreement which may be come to on the subject between France and Spain shall be communicated to His Britannic Majesty's Government. The two governments agree to afford to one another their diplomatic support, in order to obtain the execution of the clauses of the present Declaration regarding Egypt and Morocco.

The above declaration, however, contained some secret clauses which did not come into the public light until November, 1911, when the Paris press made a "scoop" which caused the political world to sit up and take notice, for reasons which will be apparent

when we take up the subject of the Algeciras Conference further along in this article. Those secret clauses dealt primarily with our old friend, Morocco. They presaged the eventual downfall of Abdul Aziz, and accordingly provided for the parceling out of Moroccan territory when the Sultan's downfall had become a fact, as is indicated from the following which is quoted from one of the secret clauses:

> The two governments agree that a certain extent of Moorish territory adjacent to Melilla, Ceuta and other precincts should, whenever the Sultan ceases to exercise authority over it, come within the sphere of influence of Spain, and that the administration of the coast from Melilla as far as, but not including, the heights on the right bank of the Sebou shall be entrusted to Spain. Nevertheless, Spain would previously have to give her formal assent to the provisions of Articles 4 and 7 of the Declaration of today's date, and undertake to carry them out. She would also have to undertake not to alienate the whole, or a part, of the territorities placed under her authority or in her sphere of influence.

As was forecast in the Franco-British Declaration outlined above, the next stage in the proceedings of Moroccan affairs was reached when the Franco-Spanish Declaration was negotiated on October 3, 1904. The salient points to this public declaration were that Spain declared her adherence to the Anglo-French Declaration of April 8 of the same year, and that both France and Spain "remained firmly attached to the integrity of the Moorish Empire under the sovereignty of the Sultan."

But, as in the case of the Anglo-French Declaration, secret clauses also formed a part of the Franco-Spanish agreement; and, similarly, those secret clauses were not made public until November, 1911, when the Paris press made the aforementioned sensational scoop. A paraphrased summary of the secret clauses reveals that, owing to Spain's possessions along the Moroccan coast, she was accorded similar rights in the Moorish country as passed to France under the Franco-British agreement. It was further stipulated that Spain would not undertake to assert her right of action for fifteen years without French sanction, that under no circumstances should any foreign power be requested to render assistance during any changing phase of the political status of Morocco, and that all economic projects looking to the development of railways, public works, etc., should come under the immediate cognizance and direction of French and Spanish interests.

Subsequently, another Franco-Spanish secret treaty pertaining to Morocco was negotiated on September 1, 1905.

Thus, owing to her interests along the Moorish Coast, the subject of Moroccan affairs was formally projected into the purview of Spain, and those interests acted as a lubricant to the ways from which was launched the Entente Cordiale upon the sea of European politics. Furthermore, although Morocco constituted one of the major cogs in the machine which fabricated that Franco-British rapprochement and by which those two powers reached an agreement over their serious differences which existed on other parts of the globe, that machine, indirectly at least, also brought to an end the autonomous status of the Shereefian Empire and advanced France one step nearer the goal of her colonial policy—the establishing of a French protectorate over Morocco.

To summarize the situation at this critical period of Moroccan history it will be seen that the panacea to existing evils in Morocco, as prescribed by French diplomatic practitioners, was French "peaceful penetration" into that country. England was called in for consultation over the condition of the patient and subscribed to the French diagnosis. Spain was permitted to feel the patient's pulse. The direct reaction of this consultation was the Franco-British agreement of 1904. Germany, not being a Mediterranean power, was not called into the above consultation, although she possessed extensive commercial interests in the Moorish country. However, as will later be shown, Germany indicated in no uncertain manner her displeasure at not being invited to take part.

In the meantime the Russo-Japanese War was in progress, and, although at first blush it apparently is a long-distance echo from Mukden to the caravan paths of Morocco, that war nevertheless played no inconsiderable part in bringing to the fore certain changing phases of political line-ups among the European powers, which were to have a very direct bearing upon Moroccan affairs. In order properly to stress this point let us briefly consider the comparative military strengths and the relative spheres of influence wielded on the European Continent by the various powers both prior to and subsequent to the war between Russian and Japan. It may be said that the period extending from the middle of the nineteenth century up to 1870 was one of French preponderance, the twenty years immediately following the Franco-Prussian War was one of German ascendency, while that from

1890 up to the Russo-Japanese War constituted a period of Russian preponderance. During the latter period, moreover, this predominating influence of Russia served as a potent deterrent to any aims of German aggression on that continent, and this period was one of comparative peace and quiet throughout Europe. The Muscovite Bear had long been the peace-bearing counterweight in the European political balance.

But, with the defeat of the Czar's army and navy by the little brown men of the East, Russia immediately became enveloped in an orgy of anarchy which, for a time at least, caused her to fade out of the picture as a dominating political influence in the Old World. One of the outstanding consequences of the defeat of the Russians by the Japanese was, insofar as concerned European affairs, the undeniable supremacy which passed to Germany and which rendered her incomparably the foremost military power on that continent.

Therefore, Japan having taken the measure of Russia as a military power early in that war, the ink was hardly dry on the final touches of the French, British and Spanish Agreements over Morocco before Germany indicated her displeasure at being left out of the Moroccan negotiations; this was manifested by Emperor William II tossing his spiked helmet into the European political ring during his now famous visit to Tangier on March 31, 1905. That visit occurred close upon the tenth anniversary of the opening of the Kiel Canal, and German sea power had become an established fact. Incidentally, it should here be stated that one of the units of the German Navy, the cruiser *Friederich Carl,* acted as escort to the Kaiser, who was on board the liner *Hamburg,* when he made his Tangier trip. Upon going ashore in that city the Kaiser was enthusiastically greeted by the German residents, and he received the diplomatic corps and also held an audience with a Moorish delegation which had come to greet him from the Sultan's court at Fez. The Emperor let it be known that Germany intended to protect the interests of her nationals in Morocco, and emphasized the fact that his country recognized the absolute sovereignty of the Sultan and the integrity of the Moorish Empire, and, that it was his desire to bring about an understanding with the Sultan to that end. It would thus appear that, although the contents of the secret clauses of the French, British and Spanish

Agreements of 1904 were not made public until November, 1911, the efficient German intelligence system had become aware of the contents soon after the negotiations had been completed.

It has been asserted in some circles that it was the Kaiser's desire to disrupt the Franco-British rapprochement through his visit to Tangier; but, be that as it may, that short visit was sufficient to set all of Europe talking for a full year, and also served to stiffen the Sultan's opposition to some reform measures which the French had a short time previously proposed be put into effect to preserve order in Morocco. Furthermore, by that visit Germany served notice to the world of her intention henceforth to take a more aggressive part in international affairs, particularly European.

As viewed from a naval standpoint, another outstanding manifestation of the effect of the Franco-British Agreement, the Entente Cordiale, upon European affairs in general was the change which ultimately took place in assigning certain naval units of those two powers to new theaters of operation. Ante-dating the Napoleonic Wars it had been the British policy to assign the most formidable units comprising her sea power to the Mediterranean, and it is now well known that one of the most potent factors in the maintenance of European peace during the Boer War was the efficiency and high standard of perfection attained by the British Mediterranean Fleet, at that time. In fact, for years the British Mediterranean Fleet had been the pride of her navy and was much more powerful than the units assigned to the North Sea and the Channel. As for France, owing to her geographical position, she had been compelled to divide her naval forces between the Channel and the Mediterranean; but, as already pointed out, German sea power had become an established fact, and England was not slow in realizing that for her part the North Sea or the North Atlantic would be the next probable scene of major fleet combat operations. Therefore, after the Franco-British rapprochement, England moved her most powerful ships from the Mediterranean to the North Sea, while France on the other hand was thus free to concentrate her major naval forces in the Mediterranean. Obviously, the World War proved the soundness of the logic upon which that arrangement was based.

Following closely upon the Kaiser's Tangier visit, the Sultan of Morocco, Abdul Aziz, who as has already been shown was in des-

perate straits with regard to the administration of his country, approached the signatory powers of the Madrid Convention of 1881, with the view of calling another international conference over Moroccan affairs. Germany encouraged the Sultan's action on this point, but both France and England objected to calling another conference and indicated that with their concluding the agreement of 1904 those two powers had definitely considered the Moroccan question as a closed incident, and that to reopen it would only compromise the intent of the Entente Cordiale. Both Germany and the Sultan persisted, however, in their contention that the calling of another conference was highly desirable in settling amicably the status of Morocco. At this juncture the relations between France and Germany over this question became quite tense, as also, but to a lesser degree, those between England and Germany; and it is not too much to say that seeds of war were then being sown in the hot beds of intrigue which surrounded the court at Fez, and that those seeds were destined later to germinate and develop under Morocco's tropical sun, and to be borne by the balmy breezes across the Mediterranean to propagate on the European continent.

However, through an agreement reached in September, 1905, arrangements were finally made for calling another international conference, to which France and Germany agreed to submit the matters in dispute between them relative to Morocco. This conference, known as the Algeciras Conference, convened on January 16, 1906, at Algeciras, Spain, and was composed of the signatory powers to the Madrid Convention, also Russia. This conference is of especial interest from the American standpoint, inasmuch as it was the second time that the United States had officially participated in international negotiations over Moroccan affairs.

The outstanding subjects contained in the Act of Algeciras and as evolved by that conference may be summarized as follows: The organization and control of the Moroccan police; exclusion of contraband arms; creation of a state bank to facilitate financial reforms; devising improved methods of collecting revenues; creation of new sources of revenue, and assuring the application of the principle of economic liberty relative to public services and public works in the country. Owing to its international aspect in a military sense the understanding arrived at relative to the distribution of police force at the eight seaports is of special interest. This

article of the act specified: That the ports of Mogador, Safi, Mazaghan and Rabat were to be policed by France; the ports of Tetuan and Larache by Spain; while France and Spain were jointly assigned the task of policing Casablanca and Tangier; the police force to consist of not more than 2,500 natives, with Moorish kaids as commanders, French and Spanish officers and non-commissioned officers as instructors, while a Swiss army officer was to serve as inspector general, all of which arrangement was to be effective for a period of five years.

The above conference adjourned on April 7, 1906, the American plenipotentiaries having signed the act under reservations of the following declaration:

> The government of the United States of America, having no political interest in Morocco and no desire or purpose having animated it to take part in the conference other than to secure for all peoples the widest equality of trade and privilege with Morocco and to facilitate the institution of reforms in that country tending to insure complete cordiality of intercourse without and stability of administration within for the common good, declares that, in acquiescing in the regulations and declarations of the conference, in becoming a signatory to the General Act of Algeciras and to the Additional Protocol, subject to ratification according to constitutional procedure, and in accepting the application of those regulations and declarations to American citizens and interests in Morocco, it does so without assuming obligation or responsibility for the enforcement thereof.

In giving its advice and consent, on December 12, 1906, to the ratification of the act the Senate of the United States resolved "as a part of this act of ratification, that the Senate understands that the participation of the United States in the Algeciras Conference, and in the formulation and adoption of the General Act and Protocol which resulted therefrom, was with the sole purpose of preserving and increasing its commerce in Morocco, the protection as to life, liberty and property of its citizens residing or traveling therein, and of aiding by its friendly offices and efforts in removing friction and controversy which seemed to menace the peace between powers signatory with the United States to the treaty of 1880, all of which are on terms of amity with this government; and without purpose to depart from the traditional American foreign policy which forbids participation by the United States in their scope." Under the foregoing reservations President Roosevelt ratified the Act of Algeciras on December 14, 1906.

It is here worthy of note that although France, England and Spain had previously arranged for the parceling out of Morocco in accordance with their secret treaties of 1904, Article 123 of the Act of Algeciras provided that: "All treaties, conventions, and arrangements of the Signatory Powers with Morocco remain in force. It is understood, however, that in case of conflict between their provisions and those of the present General Act, the stipulations of the latter shall prevail." And it is the fact that France, England and Spain entered this conference bound under pledges of their secret treaties over Morocco which caused such a sensation in Europe when those secret clauses were first made public in the Paris press in November, 1911. Even at this late postwar time—this era of League of Nations, International Court of Justice, covenants openly arrived at, etc.—one wonders, when referring to the old order of secret diplomacy, whether he can truthfully say: "Them days have gone forever!" At any rate, it is to be hoped so.

When viewed in retrospect at this late date the Moroccan situation affords conclusive evidence of the extensive colonial aspirations cherished by both France and Germany, especially in Africa, and whereas Morocco had constituted the common ground upon which France and England effected a compromise over their colonial differences, that country was also to be the ground upon which France and Germany were to pit their diplomatic wits in attaining their respective aims of colonial expansion on the Dark Continent. But even so, it was one of the paramount purposes of the Algeciras Conference to preserve the integrity of Morocco, as outlined in the opening paragraphs of the act resulting therefrom, which specified that:

> In the name of Almighty God . . . Inspired by the interest attaching itself to the reign of order, peace, and prosperity in Morocco, and recognizing that the attainment thereof can only be effected by means of the introduction of reforms based upon the principle of sovereignty and independence of His Majesty the Sultan, of the integrity of his domains, and economic liberty without any inequality, have resolved, upon the invitation of His Shereefian Majesty, to call together a conference at Algeciras for the purpose of arriving at an understanding upon said reforms, as well as examining the means for obtaining the resources necessary for their application. . . .

It would thus seem from the foregoing that the integrity of the Moorish Empire had been rendered secure against future com-

promise by any power coveting an increased sphere of influence therein. But, as we shall see, France cast a couple of anchors to windward in the form of certain articles in that act: The first was a foot-hold of a very potential value which she retained in Moroccan affairs, through insisting upon participating, with Spain, in providing French instructors for the police force in six out of the eight ports open to commerce. This privilege was very bitterly contested by Germany at the conference table, but France finally succeeded in carrying her point. The second was with regard to the traffic in arms in the region bordering upon Algeria, over which France insisted upon exercising exclusive concern in dealing with Morocco.

Although the Act of Algeciras was ratified on June 18, 1906, by Sultan Abdul Aziz it did not prove generally popular with his people, and many of the tribes accused the Sultan of having sold out his country to the powers. Obviously, this did not tend to add to his prestige among his people, which as already pointed out was at a very low ebb. In fact, in less than fourteen months after the Sultan's ratification of the act conditions in Morocco had become so chaotic that an event occurred at Casablanca, which for bloodshed and disaster, eclipsed any other event in the modern catastrophic history of that country.

The above mentioned event was the Moorish massacre at Casablanca of July 30, 1907, followed by the bombardment of that city, on August 5, by the French cruiser *Galilee*. The immediate cause of this trouble was the Moorish murder of nine Europeans, including three French subjects, who were engaged in certain work incident to some harbor improvements at Casablanca, the concession for which had been granted to a French construction company. But, broadly speaking, the basic causes of that trouble were three-fold: first, the general disorderly condition which obtained throughout Morocco as a result of the weak reign of Abdul Aziz; second, the aggressive prosecution by the French of their drives against the lawless tribes in the vicinity of the Algerian border and the recent French occupation of Moorish territory around Oudja, in eastern Morocco; and lastly, the resentment which had been growing among the Chaouia tribesmen around Casablanca over the appointment of French customs officials in that port.

When news of the murder of the three French subjects reached Tangier, the cruiser *Galilee,* which was then off that port, was dispatched to Casablanca, and early on the morning of August 5 the cruiser sent a small landing party ashore for guard duty at the French Consulate in the latter port. After disembarking this party encountered some resistance by the natives when entering the gates of the city. Previous arrangements having been made before embarking the landing party to the effect that in event of attack by the natives a signal would be sent up from the French Consulate for the *Galilee* to open fire upon the city, that signal was accordingly made, and soon thereafter the cruiser opened fire and bombarded the city for about three hours, at the end of which time Casablanca was but a shambles with hundreds of killed and wounded natives. A short time before noon another French cruiser, the *Du Chyala,* arrived from Tangier and also sent a landing party ashore. Later in the day the Spanish cruiser *Alvarado de Bazan* anchored off the port and sent a small guard to the Spanish Consulate. On August 7, other units of the French Fleet arrived and landed several detachments of the French Army. They took up their positions on the outskirts of the city, where they were covered by the guns from the French Fleet, and began active operations against the Chaouia tribesmen.

Thus the occupation of Oudja, in eastern Morocco, and the bombardment of Casablanca by the French Fleet and the subsequent occupation of that region by the French Army may be said to mark the first phase of Morocco's passing under a French protectorate.

During the next few weeks the French gradually extended their occupation until it encompassed practically the whole of the Chaouia region. The remainder of the year was filled with serious uprisings throughout Morocco against Abdul Aziz and, on January 4, 1908, his half-brother, Moulay-Hafid, was proclaimed Sultan at Fez by some of the reactionary factions. In the meantime Abdul Aziz had gone to Rabat where he could seek protection of the French should it become necessary. In the following August the forces under Moulay-Hafid came in contact with those under Abdul Aziz, and the latter suffered decisive defeat at the hands of his brother.

In addition to inheriting the serious and burdensome financial

entanglements of his brother's reign, Sultan Moulay-Hafid was also immediately confronted with another succession of demands upon the already depleted Moorish treasury, chief among which was a large indemnity claimed by France incident to the massacre and the bombardment of Casablanca. This involved floating a new series of European loans, with the consequent additional liens upon the country's customs receipts, all of which still further tightened the strangle-hold upon the sovereignty of Morocco and hastened the days of a French protectorate.

Germany having viewed with some concern the above mentioned French military occupation of Morocco, as well as the obvious state of dependence being progressively imposed upon the Sultan as a result of his financial difficulties, she sought to amplify, with France, the interpretation of the terms of the Act of Algeciras. This culminated on February 8, 1909, in a joint declaration by those two powers, the terms of which specified that:

> The government of the French Republic and the Imperial German Government, being equally anxious to facilitate the execution of the Algeciras Act, have agreed to define the meaning which they attach to the articles of that act with a view to avoid in the future all sources of misunderstanding between them. Therefore, the government of the French Republic, firmly attached to the maintenance of the independence and integrity of the Shereefian Empire, being resolved to safeguard the principle of economic equality, and, consequently, not to obstruct German commercial and industrial interests in the country; and the Imperial German Government, pursuing only economic interests in Morocco, recognizing on the other hand that the special political interests of France in that country are closely bound up with the consolidation of order and internal peace, and being resolved not to impede those interests: Declare that they do not pursue nor encourage any measure of a nature to create in their favor or in that of any power an economic privilege, and that they will endeavor to associate their nationals in affairs for which the latter may obtain a concession.

Although the above Franco-German Declaration was designed primarily to renew the pledge for preserving the integrity of Morocco and for removing any causes of friction between those two powers over that country, stormy times in connection therewith lay ahead, and Moulay-Hafid's days as Sultan of the Moorish Empire were to prove comparatively few and full of trouble.

Throughout 1910 Morocco was a seething mass of unrest and fanaticism, which increased as time went on and developed into a spirit of open revolt against the Sultan for the tyrannical methods

adopted by him in exacting additional taxes and tribute from his people for the support of his rapidly disintegrating armies. Conditions in the vicinity of Fez became especially alarming for the European inhabitants, as in addition to the revolt against the Sultan there was also being engendered among the natives a strong anti-European sentiment. This chaotic condition reached its climax in April, 1911, when the Sultan was besieged at Fez by the insurrectionary forces, whereupon Moulay-Hafid requested assistance from the French troops of occupation. The French Army readily accepted the invitation and occupied Fez, thus consummating the second phase of their program of establishing a protectorate over Morocco. Although England concurred in the French occupation of Fez, both Spain and Germany looked upon this latest move of France with some misgivings. Spain shortly afterwards poured more of her troops into the stormy Riff region and also occupied the cities of Larash and El-Kasr in northwest Morocco, thus signifying her intention of asserting her claim for the previously designated "Spanish zone," in the event that the French occupation should be accompanied by any changing status of Morocco. At this time Morocco fairly bristled with French and Spanish bayonets. Germany also evidently began to sense the feeling that her sphere of influence in Morocco was slipping, as was also her aspiration for colonial expansion on the Dark Continent, so she took steps to apply the brakes by calling upon her navy to stage another international demonstration, as manifested by her dispatching the gunboat *Panther* to Agadir, on the south Atlantic coast of Morocco, in July of that year. Although this move, as formally interpreted by Germany to the powers, was intended primarily to protect the lives and interests of her nationals residing in that locality who had become alarmed at the ferment which had spread to the natives in the surrounding region, it nevertheless fell like a veritable bombshell in the European political camps and came very near precipitating the war which was destined to come just three years later. The writer was in England during the month of July, 1911, when the feeling incident to the *Panther's* Agadir visit was at its height, and he remembers well the impressions which he gained from the European press at that time and which caused him

to feel little surprise when the World War broke forth in 1914.

In the heated discussion evoked at that time by the Franco-German controversy over Morocco, which grew directly out of the *Panther's* Agadir trip, England supported France and thus demonstrated to the world that the Entente Cordiale possessed a fine set of sharp teeth and that it was something more than a mere diplomatic arrangement; whereupon Germany decided that the time was not yet ripe for springing the trigger which would release an European War, so she backed down, but not without first scoring a point in favor of her quest for colonial expansion in Africa; this resulted from the Franco-German Convention of November 4, 1911, which in effect stipulated that for Germany's recognizing the principle of a French protectorate in Morocco, France in turn ceded to Germany certain territory in the French Congo in exchange for a small parcel of German territory in the Upper Cameroons. Although that convention allayed, for a time at least, the European war, the irony of it all was that it also converted the Act of Algeciras into bits of blood-red confetti, which three years later were to be strewn upon the four winds of Europe from the mailed fist of Mars. Furthermore, with the signing of that convention it may be said that the absolute sovereignty of the Moorish Empire definitely went by the board, for in less than six months thereafter Sultan Moulay-Hafid signed, with France, the Convention of Fez in which he recognized a French protectorate over Morocco, thus marking the beginning of the third phase of France's program in that country.

The Convention of Fez provided for the appointment of a French resident-general in Morocco with authority to act as the Sultan's sole representative in dealing with other powers. Within a few days after that convention was signed another series of serious insurrections occurred at Fez, in which many Europeans were killed, including several French officers who were massacred by some of their own Moroccan troops. Then it was that France seized hold of that country in earnest and with an iron hand. General (now Marshal) Lyautey having been appointed French resident general in Morocco, he proceeded to Fez and assumed the duties of that office, and instituted a vigorous campaign of pacifying the country and restoring order. Through his timely, intelligent, and decisive action in dealing with the hordes of

fanatical insurrectionists in and around Fez General Lyautey narrowly averted a Holy War. Subsequent uprisings of a minor nature occurred during that summer, and as Moulay-Hafid was accused of duplicity and of being implicated in the uprisings he abdicated, in August, 1912, in favor of another brother, Moulay Youssef, the present Sultan.

Throughout 1913 and up to the outbreak of the World War the French army of occupation, under the intelligent and sympathetic direction of General Lyautey, was engaged in taking the strategic strongholds of the country and extending their lines of communications. After the outbreak of hostilities on the European Continent in 1914 the French experienced considerable trouble with German intrigues which were carried on through the Spanish zones, but General Lyautey managed to keep the country occupied and sent thousands of men and tons of supplies to France to aid in her prosecution of the War. The entire subject of the handling of the Moroccan situation during the trying periods of that war is a very interesting chapter in the history of that country and reflects great credit upon the genius of the resident general. Among the reform measures instituted by the French in Morocco are: extension of public works, highways and railroads; fostering of agricultural and industrial enterprises; inaugurating modern sanitary methods in improving the public health; extension of social institutions and educational facilities. In brief, the effect of French endeavor in Morocco has been one of decided evolution, not revolution, and when the numerous improvements, reforms, and other constructive measures instituted under the French protectorate are considered, one cannot help but feel that not merely Morocco, but the world as well, is better off for the French occupation of that country.

Any dissertation on Morocco, especially from a diplomatic angle, would be incomplete if no reference were made to the Moorish bandit *de luxe,* Raisuli, who twenty years ago, in 1904, kidnapped Perdicaris, an American citizen residing near Tangier, and held him for a $70,000 ransom. The United States sent an imposing naval force to Tangier and demanded the release of Perdicaris. Shortly thereafter the Sultan of Morocco advanced the ransom and Perdicaris was released. The American naval force assembled at Tangier on that occasion was one of the most, if not the most,

formidable ones which our government had ever dispatched to European waters on a mission designed primarily to support diplomatic negotiations during times of stress, and consisted of the *Brooklyn* (flagship), *Olympia, Baltimore, Cleveland, Atlanta, Castine* and *Marietta,* while assembled at Lisbon, within a day's run of Tangier, were the battleships *Iowa, Kearsarge, Maine* and *Alabama.* Perdicaris was released, we paid no ransom, and not a shot was fired. Although of small final proportions as an international event, that incident none the less affords a striking example of the potency of our Navy as a dynamic apostle of peace—and that is not the only instance on record where the fragrance and significance of diplomatic bouquets have been preserved and accentuated by saying it with battleships!

As for the Tangier of today, including the adjacent 140 square miles of hinterland comprising the internationalized zone, conditions therein have been but little improved in an economic sense during the past twenty years. Both France and Spain desire complete control of the Tangier zone and no agreement has yet been reached. Moreover, the unsatisfactory conditions which today obtain in that city offer a striking contrast to other sections of the country which have been subjected to the unhampered and helpful influences of the French protectorate. Although the Diplomatic Body, which really constitutes the civil government of the city, has endeavored in a fashion to improve conditions, its efforts have lacked the teamwork and coordination which are essential to progress, owing mainly to the international rivalries and jealousies which for years have existed among certain powers over the status of Tangier. At present those rivalries are confined for the most part to France, Spain and Great Britain. A convention bearing upon the subject of the future status of Tangier was signed by representatives of those three powers in December, 1923, at Paris, and has recently been ratified by those governments; but in view of the past history of negotiations over that unfortunate city it is difficult to view the future with much optimism, unless those international rivalries and jealousies are repressed, and opportunity afforded for the normal development of the city through the non-political and intelligent economic exploitation of her natural resources and inherent advantages, of which there are many. All in all, owing to its international scope, the subject of the future

status and development of Tangier is an interesting one, and diplomatic eyes will continue to focus upon the little white city situated on the Straits of Gibraltar. Our Consul General at Tangier is the American member of the Diplomatic Body of that city.

Another interesting phase of the Moroccan situation arises when comparison is made of the results achieved by the French and the Spanish in administration of their respective zones. Even as these lines are being written a very serious condition has developed in the Spanish zones of Morocco—which, in reality, is but an acute state in the incessantly hostile relations which for ages have existed between the Spaniards and the Moors. Should Spain ever relinquish hold upon the Riff region, the coastal section of which constitutes a strategic keystone to the control of the western Mediterranean, the future status of this question is pregnant with considerable international interest. It has even been predicted in some quarters that some day an exchange of the two Pillars of Hercules will take place between Spain and Great Britain, and one wonders what effect such an exchange would bring about in the relations of the various European powers. But as to that, we shall see what we shall see. At any rate it is safe to say that this region will continue for some time to come to be a source of much interest to students of international affairs.

During the past ten years international writers have advanced various theories as to the cause of the World War, some of which include: the vicious racial hatreds and rivalries which for ages have existed on the European Continent; the bitter Franco-German animosities over Alsace and Lorraine; Germany's open challenge to British supremacy in sea power; the Austrian charge that Russia was attempting to absorb the entire Balkan peninsula, including Constantinople, and that Serbia was being used only as a means to that end; and the frenzied and determined efforts which Germany was putting forth to achieve supremacy in the world's commerce, and, ultimately, world domination. Granted that those factors are intimately interwoven in the genetic fabric of that war, it is the writer's belief that when all of the causes shall have been placed in their relative order of importance on the pages of history, Morocco will stand well to the fore.

The foregoing outline serves to indicate the importance of that country in world affairs, resulting chiefly from her strategic loca-

tion; and, as viewed from that standpoint alone—not to mention the potentially great economic and commercial phases of the subject—her importance will increase rather than diminish, inasmuch as the long-range gun, the military triumph of the air, and other components of modern warfare have relegated the impregnable status of Gibraltar to a past age. Thus any first rate naval power possessing a dominating sphere of influence in Morocco is in a position to play a prominent part in maintaining the peace of the world. In truth, it may be asserted as a maxim that Morocco constitutes one of the hubs from which radiate many of the policies incorporated in Mediterranean sea power, and it is no exaggeration to say that much which affects the future peace of the world is "bound in Morocco!"

IF I WERE TO DO MY SERVICE OVER AGAN

By Lieutenant Commander H. R. Snyder, (Sc) U.S.N.R.F.

AFTER one has spent ten years in the navy and then resigned and notices that his liver is not acting as well as it ought to, due to too many courses at lunch and dinner for all those years, there is an inclination to look back over his experience—to see things in perspective, as it were.

I think we sometimes work so close to our daily routine that we lose a sense of the true values and proportions of things. We need to stand off for a space and view our work from a distance, with our own shadows removed from it, before we can really see it. This is a need of the service and inclines me to reflect on how I should behave myself differently if I were to do my service over again.

Although these reflections apply particularly to the supply corps, there may be some food for thought to officers of all corps. They are based on ten years' experience as an officer of the regular service and on the renewed and reminding contacts made through active service with the Naval Reserve Force.

First and most important of all, might be mentioned the subject of our general attitude toward the service, toward both our immediate and distantly connected brother officers and the attitude we inspire in the enlisted men of our departments.

The general attitude of all persons in the service might well be classified under two main headings and all sub-divisions avoided for the purposes of this article. There are, first and most desirable, the coöperators. The title explains itself. There are, second, the prerogators, or those who first, last and always, stand by their prerogatives both in their personal and duty status and relations.

The first class works for the big circle as a whole, subordinating their own interests and those of the men in their department to the greatest good of the ship and the Navy as a whole. The second class works for the little circle within the big one, the little wheel within the big one, unconsciously checking the maxi-

mum good that the big unit can mean. The first works for all the movement which makes up the watch; the second, being a cog in the machine, thinks and acts as unto itself, with only a casual interest in the other cogs.

It is the attitude and personality of the head of the department which determines whether the enlisted men of that department fall within the class of coöperators or prerogators in their relation to enlisted men of other departments and the ship as a whole.

A good illustration of the workings of this latter class might be found in the young officer who allows his men to "pull his leg," or whose men inspire in him a feeling that they have special rights and privileges in their work which immunize them to certain accessory duties they might be called upon to perform in the ship's routine, or whose men come with complaints which in turn he feels he must "take up with the executive officer." The men feel that their ratings and duties entitle them to certain prerogatives. Their division officer then absorbs the idea that if he is going to get coöperation from his men in his own department, he must "back them up."

This is where the trouble starts and the officer develops into a kicker and prerogator. It soon develops that he and his men claim more privileges than those to which they are entitled and certainly more than are good for the ship as a whole. It causes trouble all up and down the line. The same attitude of always demanding one's rights, or imagined rights, develops in the ward room. Sour stomachs develop and the chances of a happy ship go glimmering.

On Saturday morning inspections the cooks and bakers and yeomen and what-nots all take a trial at being relieved from quarters because the food will spoil, or the payroll won't be ready, or a dozen other disasters will happen. The same story comes aft at special quarters for ship's drills, and so it goes. Each man, if he thinks he can accomplish it, not the least the commissary steward, has a plausible story for relief from some fancied grievance or duty. This can occur not only in one department, but between individual officers and their departments. The way to cure it is to take it in hand when young.

If I were to do my naval service over again I would have little chats with my petty officers at morning musters. I would tell

them on the first day a few things to the following effect: "Men, there are a lot of us gathered together on this ship in a cramped space. We are sent out on a shingle for our lives, to toss about on all the oceans, a thousand men or more to live and work on a few square yards of linoleum. We have important work to do, and to do it well, we must first of all be happy; not only you men in my department, but all the men in all the departments, and not only all the men in all the departments, but all the officers in all the departments.

"To be happy enough to enjoy our chosen life and to accomplish our work well, we must be coöperators. We must pull together, not for our special little group in our department, but for the ship's company and the ship's work as a whole. We are, first of all, a unit preparing to fight an enemy of our country. We must, to prepare right, work and play and pull together. We must, each individual man of us, give up some of the privileges and immunities from possible duties to which we think our rates may entitle us. As long as we are in the Navy we are not entitled to anything but to work and play and pull together happily.

"To do this we must do our daily work as well as we know how, both the work that will be seen, and the work that we think will not be seen. We must spare our seniors foolish questions, petty problems, things which we could think out and do properly without running to ask someone else how we are going to overcome this and that obstacle.

"Moreover no special work is to be ours exclusively. We shall be able and glad to lend a hand with anything that looks like making the ship go or preparing her to fight, whether it is in our own or other departments.

"There is no such thing as being excused from musters, quarters or inspections. It does a man good to dress up and get clean and look over his ditty box once a week. It is a privilege to do it. It keeps the mold off from us. It makes us realize that, if our work makes us dirty most of the time, we still have not forgotten how to get cleaned up.

"Don't come to me and ask how to do any of your work if you know or can find out how. Make a try at it anyway. Relieve me of all the petty details you can, for I have enough to worry me in any case, many things which you do not know about. If you

save me, I can save my good humor and always have it with me. In turn, I will treat my superiors in the same fashion.

"If I can possibly work out the problems and snags of my department with your good help and coöperation, without carrying my troubles to the executive or the captain, I am going to do so. They have the burden of every department's troubles to bear and I don't want them to have any additional ones from mine. I want them, after a couple of months, to say to me, 'Pay, your department seems to function very smoothly. Regular oil bath, roller bearing mechanism, I should say. I never hear any kicks or excuses from it.'

"Then there is another thing I like to have the commanding officer say at Saturday inspections. They've said it to me on other ships, and I want them to say it on this: 'Pay, you have the cleanest, snappiest looking division on the ship. You are to be congratulated.' Boys, it makes a lump of gratitude rise in my throat to get words like that in the hearing of the big family. We can then josh the others into sprucing up a bit and so improve the whole lot.

"All this happiness that we can have is up to you. If you can legally do a favor for a shipmate, do it—never kick—and always do a little more and a little better than is required of you; then life in the Navy will be one sweet song."

The foregoing would be my talk to both the division and the individual in the attempt to make my own little niche on board known as the coöperators.

Looking back in perspective it next occurs how important is food in the Navy. If I were to do my service over again, I would, after my first year of learning and experience, never fail to work out the menus in conjunction with the commissary steward. I would never, unless he were a rare jewel, and there are such occasionally, let him work these out alone, for fear that his idea and mine and the crew's did not agree on the subject of food.

I believe that a man is affected in planning menus all his life by what he has had to eat at home. He has his definite idea of a good meal. He, of course, learns a few things to cut out and to add, by hearing kicks from the crew, but, nevertheless, what his mother gave him to eat, or his wife gives him to eat, influences to a large extent his leanings.

The navy provisions are, now-a-days, of most excellent quality and assortment if properly chosen and used. You cannot find on the market better jams, or cheese, or a dozen other things I might mention. The grading, the quality of packing, the presentation of the article is all that could be desired.

It is true that, along with the economy era, there is a pressure to reduce costs; but, like our other handicaps we, if we are to be coöperators, must swallow this misfortune and smile. With study and a little knowledge of dietetics we can still survive, eat and be happy.

So, I say, the eats are extremely important if we would have a ship full of coöperators; in fact, they are the first essential. I would give them my utmost study in purchase, preparation and service. The assortment is important. There are items available to the Navy which I will wager some ships never see, because the steward hasn't the ingenuity to see where they could fit in, for variety's sake, or how to use them. This is where the supply officer can intervene.

Eats, yes. In the Grand Central Terminal the other day, I happened to stop in at the drug store and take a hurried bite between trains. They had the most delicious assortment of drinks and sandwiches you could imagine. None of the ingredients were expensive, but they were tastefully put up with thoughtfulness. They were attractively served and clean. Each sandwich, and they had a wide assortment, was wrapped in a solid piece of parafined paper. It made you think it was all as clean and wholesome as it looked and no doubt it was so. I was hungry and it tasted good and I bethought me how nice it would be to have a counter aboard every big ship where one could step up betimes, on inclination, and buy those items, or part of them. The sandwiches cost from fifteen to thirty cents apiece at this counter, but I will wager I could have made as good ones for from three to five cents each out of navy ration components.

To continue on the subject of eats, I feel that the men who work in the dark depths of our ships at midnight or on the bridge, as the case may be, while the rest are asleep, rate our best consideration. Too often sour old coffee, left over from morning in an uncleaned urn, is dished up for night rations. I would get after those rations and inspect them and make them good. The

ration charge would be negligible. Some of that drug store system would go into them. As most of the men on the ship stand night watches at one time or another, they would all in turn learn to bless my department of coöperators. Any other treatment of the night watches would be sheer laziness on my part and the part of the men in my department. Anything else would be merely getting by, within the law and the regulations, but naval officers "shall not live by regulations alone" if they would be happy.

The drab routine that ships frequently go through for long periods in out-of-the-way locations is conducive to the corroding of our spirits, and a general physical let-down which brings on lethargy and laziness. This is the fault we have hardest to fight. To overcome the circumstances which bring this mental, physical and moral change there must be constantly in mind the thought, "I will keep spruced up whatever happens. I will force myself to exercise enough, to eat properly, to keep my mind bright by acquiring new ideas and things to think and talk about every day. If I do this, my spirit will be contagious. The others will brighten up also."

The respect and good will of brother officers is worth more than any other considerations. Good will is the priceless asset of the civilian business man and it is the same for the naval officer. I have a very dear friend in the service who, during our cruises together and through all the five years since my resignation, has been as close as any brother could be to me. This officer always kept his uniforms and person immaculate. His linen was changed often enough always to be perfect. His clothing perfection was reflected in the accuracy and brilliancy of his own mind and judgment. When he spoke, he had something to say. There might be general gabbling at the mess table, all well enough, at that, but when Bob inserted a few words in the conversations, I noticed that all stopped to listen. His nose was not so close to the grindstone that he forgot that he was an animated human being who should have a few interests and thoughts outside of "shop." He could talk philosophy, occultism, history, could marvel at the stars and the universe, took a lively interest in all sciences, and often we sat till two o'clock in the morning in my stateroom and were never talked out. On many an occasion I stood at midwatch with him on the bridge as the ship lumbered over tropical seas,

under skies studded with stars, and we were able to do a lot of thinking, a thing some officers are inclined to forget how to do after many years with Uncle Sam. This officer had my deep respect and that of every other officer and man on the ship.

The qualities of a gentleman as advocated by the honorable John Paul Jones, cannot too often be repeated or recalled if we would be happy coöperators in the Navy. The newcomers to the ward room since the war should be carefully induced by example, instruction and otherwise to respect the King's English and avoid continual slang and profanity. We can't be happy coöperators if we are ashamed of our mates.

Now occurs to me the thought, so often enlarged upon, that it doesn't pay to kick against the pricks. I always determined to make the commanding officer and executive officer (if possible) like me. To accomplish this, I know that I first must like them. How would you deliberately go about developing a liking for another man, a stranger, and perhaps a difficult one at that? It is very simple if you but analyze the requirements of friendship. Your closest, permanent, tried and true friend, cannot see your faults. When you make a break, there is never any pause, or any apparent notice taken of it. This explains the system. When you want to like a person, refuse, from the start, to see or be shown any faults in him. If he is very full of faults, you will have to center your mind exclusively on his few virtues.

On a former ship a new executive officer had been ordered to report. A murmur arose in the ward room, which in the course of time increased to an outspoken demur by nearly every old-timer in the mess. I thought, "My stars, what is this new officer going to be like! A sun-downer! This will be the end of our happy home!" On further consideration, I determined to force myself to like the new executive if it were possible to find any good in him at all. I started with this attitude and it resulted as might be expected, that the new executive officer and myself became fast friends. He wasn't a bad actor at all. He was really a very congenial gentleman if given half a chance, and all the talk had been based on errors in judgment of many years gone by. It is perfectly possible for a man to reform his mode of thought and his outlook after a passage of years and the acquiring of age and a family.

The little focus of friendly attitude which I began and fostered in this case, gradually spread through the ward room and in a short time all was serene. The ship had the choice of pulling together or being burst asunder with unhappiness and the former course was chosen deliberately. A good example of this in civilian life might be recalled as follows: In my office is an elderly Quaker who has a habit of avoiding unpleasantness in a really good fashion. Whenever questionable discussions come up, things that he wouldn't like to know about if he were ever called upon to testify, things he wouldn't like to have influence him to separate himself from some good friendships, he very quietly squirms out of his chair and eases over toward the hatrack, as inconspicuously as possible. There he acquires his hat and stick and starts out on some fancied errand. This happens so invariably that it has become a sort of joke in the office. The wink is now passed around when the old man eases out of his chair and starts for his hat. Often, now, fake conversations are cooked up just to see how long he will last within hearing. But, when you think of it, isn't he right, and wouldn't his reasoning apply with great force in the Navy? It would certainly sweeten up seagoing existence a whole lot if each one of us refused to be present in discussions of what an old cuss the captain or executive officer or Navy Department, or Congress really is. We want to be allowed, if possible, to think how cussed fine they are in every detail. If we have other opinions, it is a crime to force them on our shipmates. Nobody wants "a piece of your mind," anyway. The foregoing is my lesson in loyalty.

Another point that might be well emphasized is that there is a reason based on experience for all the regulations and "red tape" against which we may rebel at times. Some paymaster general once said to a young officer, "Pay, all these requirements of the officers in our corps which you find in the regulations are the result of a hundred years of development in our Navy. Every new kink that is introduced and ordered is the result of a newly discovered need in the protection and promotion of the government interests. Things are always in a state of flux and change; every organization is always moving, it may be forward, it may be backward, but it is always moving just the same. It is not for you or for me to say in haste that this or that annoying regulation or

procedure is ridiculous or unnecessary. It may be the result of a need developed in a hundred years of experience." I like both what was said and the way it was said. This paymaster general must have been a leader of great power and inspiration. He said a few things good for the Navy to know.

To summarize my attitude, if I were to do my naval service over again, I would coöperate with all other departments in all their work and see that my men did so; I would seek smooth running and easy functioning in coördination with the rest of the ship organization instead of ease and freedom from worry; I would not spare exertion of my person or private funds, if need be, to give all officers and men the most valuable service my department could render; I would be congenial and loyal, avoiding bad temper and bickerings and backbitings; I would overcome those who would impose on my men or my department with mild ridicule instead of frowns and "pulling the book"; and, above all else, I would be full of sympathy and interest in the troubles and work of others, realizing that by so doing friends are made and kept friends in a life where a pleasant atmosphere is needed if we would continue to exist. The Navy is a hard enough life with its constant privations and dangers to warrant our honoring and respecting those who have chosen to follow it with us. If we can lighten their burdens, either fancied or real, or add an unexpected or uncalled-for-by-regulations sweetmeat, let us by all means do so.

OUR CHINESE NAVY

By Wallace S. Wharton, Lieutenant (jg), U.S.N.R.F.

PAMPANGA, Villalobos, Palos, Monocacy, Elcano, Isabel, Penguin, Pigeon and *Helena.*

To the average American citizen these names mean little; but to those few who have come in direct contact with the ships bearing them, especially those men of the United States Navy known as "Yangtze sailors," they spell Adventure with a large A, for these are the ships that patrol the two great inland waterways of the Celestial Republic to protect American lives and shipping from the ravages of river pirates and bandits.

Piracy on the high seas is now-a-days noted for its absence, but on the two great rivers of China, the Yangtze Kiang and the Si Kiang, or West River, the profession is still followed, and with a thoroughness that would make the spirit of Captain Kidd pale with envy if it could but know of such activities. It is on these avenues of commerce, penetrating the interior of China, that American merchants and missionaries must travel in tending their business, and it is on the reaches of these rivers that the Chinese pirate reaps his harvest.

A merchant ship peacefully making its way up either of these two streams is apt to find itself in the midst of a flotilla of junks and with murderous looking Chinese swarming over the rails, bent on pillage and plunder; or, while moored, is apt to be boarded by a party of bandits, or irregular soldiers, with the same purpose in mind. Life in China is not held very high, so the marauders show no hesitancy in killing those who offer opposition.

It is to protect Americans and American commerce that the United States maintains the river patrol of gunboats. In these days of internal unrest and turmoil in China such protection is necessary, for neither of the two factions now claiming control seem to be able to put a stop to such depredations. In the days of the Empire, prior to 1912, the pirates, while active, were more circumspect, due to the fact that terrible torture and death was the

fate of anyone found guilty of such activities, and the Empire made some effort toward apprehending and punishing offenders.

In this respect, it is rather ironical that while the United States now operates gunboats on the inland rivers of China for the protection of our citizens from piracy, the first communication between the North American Continent and the Orient was brought about by colonial pirates operating out of New England ports. From 1690 to1710 cruises to Oriental waters by the pirates were rather common, despite the efforts of the colonial governors to stop them. These people blazed the way for the ships of peace that later made glorious history for the American Merchant Marine, though the reputation established by these deep sea rovers is hardly one to be proud of.

The first naval vessel of the United States to visit China was the frigate *Congress,* which made the cruise in 1819. Since that time ships of the American Navy have been well known on the East India Station, as it was then designated. In 1842 the British succeeded in forcing the Imperial Government to open a few ports for trade purposes, and the American squadron aided in having this opening so extended as to include trade carried by American ships. Later, in 1854, Commodore Perry, U. S. Navy, made his famous cruise to Japan, which resulted in the opening of that country to occidental traders, permission being secured from the Shogun to use certain of the island ports. Again, in 1883, the United States Navy was successful in bringing about the opening of Corea, Commodore Shufeldt being in command of the expedition.

As more ports in the Orient were opened for trade purposes the need for a naval squadron became greater. Piracy was frequently committed off the Chinese coasts and despite treaties signed by the Emperors of the Oriental nations, native uprisings threatened the life and property of the "foreign devils," so an American squadron was ordered out to the Asiatic Station, as it became known, shortly after the end of the Civil War.

When trade was finally permitted in the interior of China, the chief means of communication and travel was either by river or canal. American traders and missionaries ventured inland on these water routes to set up their establishments. Commerce between the United States and China grew until in 1923 it amounted to

$346,699,000, of which $211,818,000 was imports and $134,881,000 was exports.

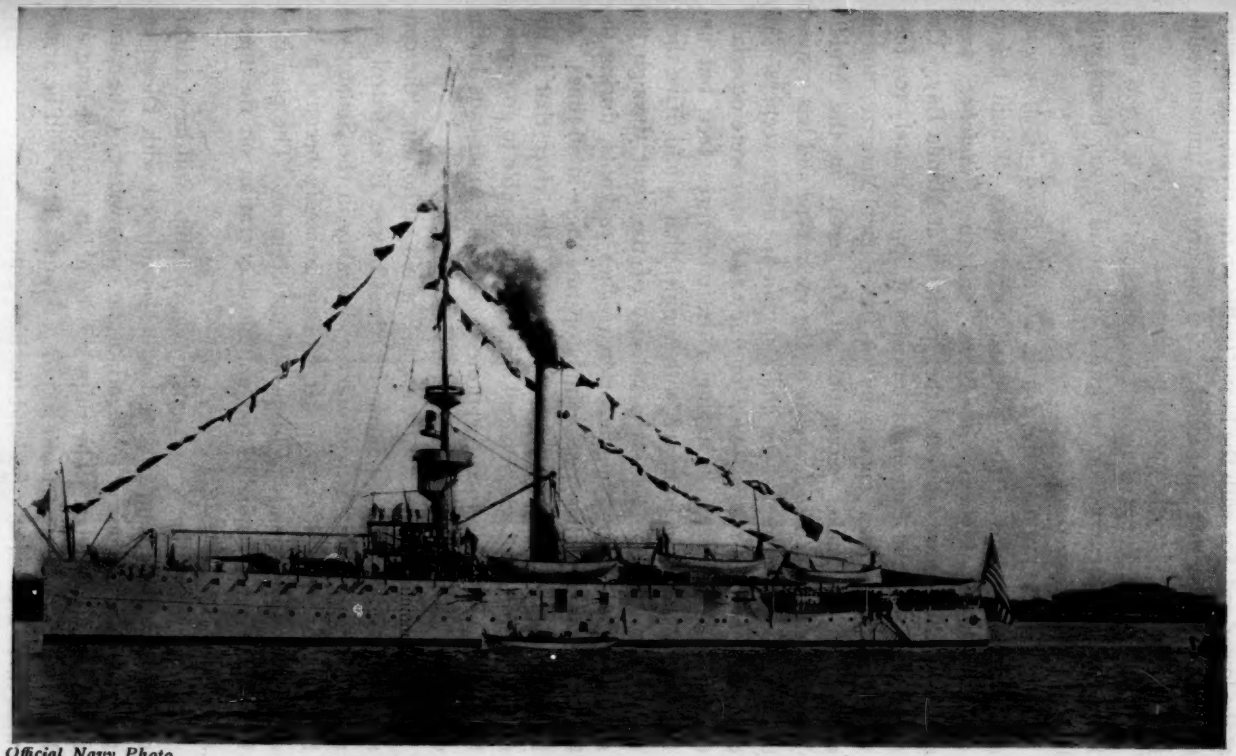
The greater portion of this trade comes from the basin of the Yangtze Kiang, which empties into the sea near Shanghai, and the Si Kiang, with its mouth near Canton. The Yangtze being by far the biggest river, extending some 2,000 miles into the interior and navigable the greater part of that distance, and carrying the bulk of the trade, the largest naval patrol is centered on that river. The squadron making up the patrol consists of the U.S.S. *Isabel,* flagship, U.S.S. *Elcano,* U.S.S. *Palos,* U.S.S. *Villalobos,* U.S.S. *Monocacy,* U.S.S. *Penguin* and U.S.S. *Pigeon.* The Si Kiang, or South China patrol, consists of the U.S.S. *Helena,* flagship, and the U.S.S. *Pampanga.*

These ships are rated as gun boats and for the most part are not able to cruise at sea. Their work is to patrol up and down the river channels, keeping pirates and bandits from creating too much havoc with American shipping, and to visit any region where the activity of bandits and irregular troops endangers American lives and property in the cities along the rivers that are open to foreigners. The other leading maritime nations of the Occident, and Japan, also maintain patrols, especially on the Yangtze.

Roughly, the Yangtze Kiang is divided into three divisions, the lower, middle and upper. The lower portion extends from the sea to Hankow, 600 miles from the ocean. This portion is navigable for craft drawing twenty-seven feet of water between June and October, and for ships with about nine-foot draft at other times of the year.

The Middle Yangtze extends from Hankow to Ichang, 950 miles from Shanghai, and is navigable for craft drawing fourteen feet during the high water period and for boats of not more than five feet during the low water period.

From Ichang to Chungking is known as the Upper Yangtze, and is the most dangerous portion of the river, both in regard to navigation and pirates. In this sector light draft steamers and junks carry the trade through the high gorges of the river and over the thirty-five rapids found in the sector. It is along the banks of the stream, in this portion, that the bandits lie in wait for passing ships and the pirates endeavor to surround the ship while it is having difficulty in heading into the rapids. One of the principal tricks of the trade is to descend the rapids and surround the ship



Official Navy Photo

U. S. S. "Helena," Old Type Gunboat, Now Flagship of the South China Patrol, Operating on the Si Kiang, or West River.

at the lower end, for with the heavy traffic on the river, the unwary ship master may not suspect that the apparently unmanageable junks are really cleverly guided pirate craft.

Trade on the Yangtze above Chungking, which is 1,336 miles from the sea, is carried on by junks and small power boats with drafts of less than three feet.

With the exception of the *Isabel, Pigeon, Penguin, Monocacy* and *Palos,* the ships of the Yangtze patrol were all built before 1896, and two of them, the *Elcano* and the *Villalobos,* were captured when Dewey defeated the Spaniards at Manila Bay. The *Isabel, Penguin* and *Pigeon* have drafts of approximately ten feet, which precludes their operations on the Upper Yangtze, and in certain seasons makes navigation of the craft in the Middle Yangtze perilous. The *Isabel* is of the yacht type and has a speed of 25 knots, while the *Pigeon* and *Penguin* are minesweepers. All three were built in 1917. The *Monocacy* and *Palos* were especially designed for river work, having a draft of three feet, but unfortunately were not equipped with engines that would drive them faster than 10 knots. As the velocity of the river through the rapids of the Upper Yangtze often reaches 14 knots, during the high water season, these craft cannot operate there at all times. As has already been said, it is this portion of the river that is the most dangerous and where patrol ships should be able to go regardless of season so as to carry protection to the Americans in the district.

During the last session of Congress a bill authorizing the construction of six river gunboats for the Chinese river patrol was passed, but due to a parliamentary technicality in the Senate, was held up for reconsideration. It will undoubtedly become a law at the present session, which opened in December. The plan is to have these craft available for unlimited operation on the upper reaches of the Yangtze.

As outlined by the Navy Department the ships will have a draft of approximately four feet, and will be equipped with Diesel engines of sufficient power to negotiate the swift water of the rapids in the Upper Yangtze. The ships will be about 175 feet long and have a displacement of from 200 to 500 tons. They will be armed with three-inch naval rifles and machine guns.

At present a type of ship adapted for merchant service on the

THE WOOSUNG RIVER, SHANGHAI, CHINA

(View from the Bund) Left to right: H. M. S. *Despatch;* French cruiser *Colmar;* U. S. S. *Huron* with a destroyer alongside. (Note the river gunboat between *Despatch* and *Colmar.*)

Upper Yangtze is being built by a firm in Shanghai, and Admiral Jackson has recommended that the hulls of the gunboats be built in China and the engines, armament and other equipment shipped there for installation. It was pointed out, in hearings of the House Naval Committee, that the ships could not stand the voyage across the Pacific, and if constructed on this side would have to be shipped in knocked-down form and assembled in China. The *Palos* and *Monocacy,* which were built in the United States in 1914, were both shipped to China in this manner.

That the need for additional gunboats, capable of operating on the upper division of the Yangtze, is great is shown by a letter written by Charles E. Hughes, Secretary of State. The letter, which was written October 16, 1923, reads in part:

The need for these vessels is most imperative. The progressive disintegration of the authority of the Chinese Government, and the diminishing sense of responsibility on the part of Chinese officials with respect to the protection of the lives and property of foreign residents, have created in China a situation which gives this department constant apprehension with regard to the safety of American citizens in that country.

Our chief commercial and missionary interests are centered in the valley of the Yangtze River, which drains the whole of Central China. Because of the existence of this river, with its branches, it is possible to extend a very considerable degree of naval protection to our interests in that valley, whereas in other parts of that country such protection is necessarily limited almost entirely to the coastal regions. For many years, it has been the custom for the powers principally interested in Chinese commerce (the United States, Great Britain, Japan and France) to maintain a naval patrol upon the Yangtze River. These vessels constantly appearing at the various ports of central China, have served to evidence to the Chinese people the ability and purpose of the foreign governments to protect both their missionaries and their traders in the exercise of their legitimate treaty rights.

As I have indicated above, the exercise of these rights is at the present time in jeopardy; and, from such information as the Department is now receiving there appears to be no immediate (prospect of betterment). Especially in the upper reaches of the Yangtze, between Ichang and Chungking, foreign merchant ships are constantly being fired upon by bandits and by irregular forces of Chinese provincial troops. Such conditions have resulted in a very considerable diminution of foreign prestige; and in one province, the Department has within the last few weeks deemed it necessary to advise the American missionary bodies that they refrain from sending further members of their organizations at the present time.

The necessity, under such conditions, for the maintenance of an adequate naval patrol is obvious. The fact that the American patrol is composed of vessels both antiquated and unadapted for service in the swift and tor-

Official Navy Photo

U. S. S. "ISABEL," FLAGSHIP OF THE YANGTZE RIVER PATROL FORCE OF THE UNITED STATES NAVY. THE "ISABEL" WAS BUILT IN 1917 AND WAS ASSIGNED TO THE PATROL DUTY IN 1921. SHE CARRIES FOUR THREE-INCH GUNS.

tuous waters of the Upper Yangtze River has been for some years a matter of regret to this Department, especially in view of the greater suitability of the craft assigned by the British and Japanese Governments for this purpose. In the event of an emergency, it is altogether likely that American citizens may have to depend on the protection afforded by vessels of other than American nationality, through the inability of our own vessels to reach them. Such a situation, as you state in your letter, "does not reflect credit on our flag or add to our prestige when these vessels are compared with the vessels of other nations that are far better represented." I may state, therefore, that it is the earnest hope of the Department of State that the new construction which your Department is planning for the service on the Yangtze River will be approved and commenced at the earliest possible moment.

It is interesting to note that the cost of maintaining the river patrol, both in the Yangtze and Si Kiangs, is, approximately, $750,000 a year. This amounts to approximately two mills for every dollar of trade being carried on between the United States and China, and, considering that the patrol's most important mission is the maintenance of peace and the protection of American lives, the cost does not seem to be excessive.

Service in the patrol force is one of great adventure, for on numerous times the Chinese bandits have fired on the ships of the patrol. On July 14, 1923, the *Pampanga,* while escorting some American merchant ships, carrying mail and also carrying wounded Chinese refugees, was fired on, both by artillery and rifle fire, by Kwangsi soldiers off the city of Dosing. Despite the ship giving the customary, and agreed upon, neutrality signal, the fire was continued until the commanding officer of the *Pampanga,* Lieutenant Leland P. Lovette, ordered the fire returned.

Lieutenant Lovette made a protest, which resulted in an apology being offered by Fung Fo Shau, commanding the Kwangsi Army at Wuchow. However, the only explanation of the incident was that there had been a misunderstanding, despite the fact that the *Pampanga* was well known in those waters and at the time was flying two large American flags.

It is interesting to note, in connection with this event, that four days later Lovette was able to effect an armistice between General Gnai Bong Ping, who planned to occupy Wuchow, and General Wu Kwong Mat, whose troops were in the vicinity of the city. The success in securing the armistice resulted in saving both life and property, which would have been endangered had General Gnai carried out his threat of bombardment.

Ships of the Yangtze patrol have also had their adventures with the pirates and bandits. None of the craft that operate on the Middle or Upper Yangtze, but have at one time or another been fired on. The men of the ships take it as a matter of course and are always willing to extend protection, not only to Americans on board merchant ships but to those in the foreign compounds of the river cities.

A recent report from the senior officer of the Yangtze patrol reads:

Reports from masters of American vessels plying the Upper Yangtze River complain that on nearly every trip they are fired upon by bandits and ex-soldiers. Even the American river patrol boat U. S. S. *Palos* has been fired on by these bandits. Two years ago while lying at Wanshien, the American river merchant steamer *Robert Dollar II* was boarded by approximately 150 armed bandits, and it was only through the timely action of the American patrol boat, that the ship and its crew were saved. Last year, on one occasion, the cargo steamer *Alice Dollar* was fired on and was hit by more than 300 bullets. Two passengers were killed. Within the last month, the same steamer was again fired on; one of the bullets passing through the galley.

In May of this year, the cargo steamer *Mei Ren*, another American boat, which called at Wanshien to load a shipment of wood oil (used in the United States in the manufacture of paint) was held up and boarded by men with knives concealed under their coats. The pilots were removed from the boat and carried into hiding and were not found by the local magistrate for three days, during which time the boat was unable to sail. The pilots were warned that if this ship again attempted to carry wood oil they would be killed and their families also murdered.

While the trade balance between the United States and China appears to be in favor of China, such is not the case. The exports from that country to this are materials that are needed in various manufacturing processes, and instead of being considered as a debt we owe China, should be regarded as an investment in raw materials.

The principal exports to the United States from Shanghai, which is the depot for the Yangtze basin, as listed by the Shanghai American Chamber of Commerce, are: antimony, bristles, hog and sheep casings, camphor, musk, cotton, both fresh and dried eggs, albumen, nuts, hair nets, human hair, hides, camphor oil, wood oil, porcelain, silk, pongees, goat and kid skins, weasel skins, sesame seeds, tea and wool.

STRATEGIC VALUE OF THE AIRCRAFT CARRIER

By Lieutenant Commander G. B. Vroom, U. S. Navy

THE arrival of the aircraft carrier offers material for speculation as to its spheres of usefulness. There is scarcely any room for doubt that it has definitely arrived, as a formidable weapon of offense and defense; there has been no spectacular début, such as established the submarine as a commerce destroyer, because, of course, there has been no set of circumstances to render its rapid development an imperative necessity for national preservation.

It may very well be a fact that the strategic and tactical uses of the carrier have been planned and digested as a part of the war plans. The discussions and plans relative to such matters are necessarily of a secret nature, and not available to the majority of the personnel of the service. Association with the leaders in the field of experimental aeronautics afloat and an opportunity to observe at first hand the enormous possibilities of the aircraft carrier as a weapon of the first magnitude, have been convincing to the writer that there, almost ready for use, is a solution to a problem that peculiarly confronts this country; the efficient defense of the wealth and industrial resources concentrated on the seaboard, without the creation and maintenance of enormous fleets of surface vessels.

The tactical value of aircraft carriers has been demonstrated to the fleet, and reported in the press, making a discussion of this sphere of usefulness superfluous; but the strategic value of the carrier, particularly defensive strategy, has not, so far as known, been considered generally; the subject is worth thought.

It is necessary to admit, in the first place, that aeronautics has taken a place equally as important as surface and sub-surface activity. It is not necessary to claim either that the plane has driven the surface ship from the ocean, or that the plane has

failed completely to establish itself as a minor weapon. Either extreme is a matter of opinion, and not susceptible of proof. The bombing of obsolete battleships scarcely proves the former, any more than the torpedoing of the same ships by unopposed destroyers would be proof of the superiority of the destroyer. On the other hand, the actual use of planes for spotting proves their value as a major weapon, but also demonstrates that they must be in sufficient force to obtain command of the air.

There does not appear to be any essential difference between the air arm, the surface arm and the sub-surface arm, so far as strategy and tactics are concerned. The successful use of a fleet, a flotilla of destroyers, or submarines, or a squadron of planes depends always on meeting the enemy in superior force, skill being equal; and failure therein implies the loss of the deficient arm, if not the entire command. The claim cannot be made that destroyers have driven the battleship from the sea, because the inference is that the enemy will be in equal force in destroyers. The launching of a successful destroyer attack implies the defeat, first, of the enemy destroyers. The same fundamental considerations would appear to govern air operations, in spite of extravagant claims put forward on the one hand, and vehement condemnation on the other.

Returning to the carrier as a strategic factor, it is a prudent assumption that the science of aeronautics is in such a stage of development that the air cruiser is an almost accomplished fact, and that the delivery of attacks from overseas bases is to be taken into consideration as a probability. What difference is there between the fundamental strategical requirements governing a long distance air attack and those governing an attack by surface craft? The cruiser (lighter than air) would certainly have first to establish command of the air, otherwise the defending forces would be able to defeat the air cruisers, by weight of numbers and mobility, just as home-defense destroyers and submarines based on home ports, could drive off battleship attacks from overseas, unless the command of the sea had just been assured for the attacking force.

Planes would have first to obtain command of the air, for air cruisers could not operate (at present) directly from overseas, but they *could* be transported in force by enemy aircraft carriers which would approach our coasts. They *could* approach our coasts, unless an immense area of ocean was adequately patrolled by sur-

face vessels, *or,* we used the natural weapon indicated—aircraft carriers, operating well off-shore, and maintaining a large scouting force of planes, based on the carriers. The number of carriers required is insignificant as compared with the number of scouting vessels necessary for such a service. The carrier's duty would be to break up or cripple air attacks in their inception. A chain of carriers stationed a thousand miles off the coast, protected by surface vessels against enemy submarine and destroyer attack would be a veritable wall of defense, impervious to attack by air or sea by virtue of its combat planes and surface screen; an all-seeing eye, from which no move of an enemy fleet would be hidden. This chain would move the "frontier" a thousand miles nearer the enemy and keep open the coastwise trade and communication routes.

If the plane drives the battleship from the ocean, it apparently will be because the battleship will be rendered helpless through too much "publicity," not because the plane can defeat the battleship in single combat. Dropping bombs on ships undefended by planes merely proves that V^2 equals 2 gs.

Between the present status of aeronautical strategy, and the full development of the carrier to an enlarged and perfected usefulness, lie many problems; not the least of these is a realization of the potential value of the carrier, not only by the service, but on the part of the public; also the active service support of an arm that appears to receive the same amount of consideration that the submarine did in its early development. The real needs of the air service today are adequate material in the shape of carriers, and an enlarged personnel not subject to rotation of duty in other specialties, particularly in the case of commissioned officers and chief petty officers who qualify as pilots. The desirability of setting apart as a separate corps those officers who specialize in aviation is a question not to be discussed here. The point that it is desired to make is that sufficient personnel should be provided for aviation afloat, even at the expense of some other activities, if only to speed up the work of a most essential arm that is in process of development and therefore in immediate need of all the energies that can be devoted to it.

When the two new carriers join the fleet, there will be more opportunity for the service in general to become acquainted at first

About to Land on Board the "Langley"—the Plane is Traveling at High Speed

hand with the value of the air arm at sea. Thus far the work carried out by the *Langley* has been largely technical research and training, and has not been in immediate view of the service. This most necessary work, upon which the success of the new carriers will largely depend, has been invariably a source of great surprise to officers who have had the opportunity to witness it in detail, to observe the thousand and one problems of design and the ingenuity with which they have been met, and to note the results already attained in this new activity.

If the Navy had, today, two 35,000-ton carriers with the fleet, and at least five 10,000-ton carriers, a series of winter maneuvers and tactical problems would demonstrate something new in the way of grand strategy. Place the fleet, for instance, at a strategic point on the Pacific seaboard, say San Francisco, and a scouting line of carriers, 500 miles apart, say 800 miles off the West Coast, the scouting line to follow approximately the contour of the coast line. Let the "enemy force" base at Honolulu; and the problem be for the "enemy" to make successful contact with the fleet or the fleet's surface scouts undetected by the air force. Provide the carriers with a surface defense of two submarines and six destroyers each, these to be fueled and provisioned at sea, and make the problem include the cutting of communications between the carrier scouting line and the mainland bases, the enemy to use submarines or destroyers to search out and attack the supply ships, undetected by the air force, or by the carrier's submarine and destroyer covering detachments . . . .

This problem is doubtless one of the more or less distant future, but the value of the air arm can be demonstrated before we get our 10,000-ton carriers and the trained air forces to man them; it can be tested by limiting the area of this problem, and assigning the *Saratoga* and *Lexington* to represent the scouting line, and, possibly, the *Langley* to represent the "enemy" carrier. Merely to lay out the problem as a chart maneuver demonstrates some very interesting situations. Try it.

AN INTERNATIONAL INCIDENT

By Commodore E. B. Underwood, U.S.N., Retired

AS FAR as I know there has been no important work on international law published in the past fifty years that has not contained a discussion of the "case" of the *Virginius*. The "*Virginius* affair," as it was called in the newspapers, created great excitement in this country, an excitement that lasted for weeks, and it was the cause of the mobilization of the ships of our European, North Atlantic, and South Atlantic squadrons at Key West early in 1874. As this controversy brought us to the verge of war with Spain, a backward glance at it may prove not unprofitable.

The *Virginius* was a small, iron, paddle wheel steamer, of fine lines and great speed, built on the Clyde in 1864, and intended to be used as a blockade runner. She ran the blockade two or three times, but was finally captured by one of our gunboats and placed under the orders of the Treasury Department, which later transferred her to the Freedman's Bureau. Presumably her great coal consumption and small cargo space militated against her usefulness, for, after having passed through other hands, she was finally sold to one John F. Patterson in August, 1870. The ownership by Patterson of the *Virginius* is questionable, for there is every reason to suppose that he was acting for the Cuban Junta when he bought her, or, if not, that he sold her to the Junta immediately after he acquired her. From October, 1870, until her career was brought to its abrupt close, she was engaged in several expeditions helpful to the Cuban cause, two or three of them consisting of landing various military arms and equipment on the south side of the island for use by the Cuban "patriots."

From October, 1870, on she did not return to an American port, but continued to have a questionable claim to American registry, as American papers had been taken out by her at the New York

Custom House in September, 1870. These papers seem to have answered all her purposes for the next three years.[1]

On October 28, 1873, the *Virginius* left Port-au-Prince, Haiti, with a large amount of war material, said to have included several hundred rifles, revolvers and sabres, together with a large quantity of ammunition, as well as clothing, medicine and provisions. All these were to be slipped into Cuba for the use of the insurgents, then engaged in their Ten Years' War against Spain; but the previous filibustering voyages of the *Virginius* had made the Spanish officials suspicious of her and they evidently had an agent in Port-au-Prince who informed them of her departure, for, on October 31, being then off the south coast of Cuba, she was sighted and chased by the Spanish gunboat *Tornado*. The *Virginius* had on board, crew and passengers, 155 men, consisting of Americans, British, and Cuban "patriots." The captain made strenuous efforts to gain Jamaican waters, even throwing overboard a considerable portion of his cargo, but as her bottom was foul, she having been in tropical waters without docking for over a year, her speed was so much reduced that the captain's efforts were in vain, though before she surrendered to the *Tornado* she had covered more than half the distance to Jamaica, being thus in a position far from Cuban territorial waters. After her capture she was taken to Santiago de Cuba, where, on November 4, four of her crew, by order of the commander of the Spanish forces, were shot, and three days later thirty-seven more of the prisoners, including her captain, shared the same fate.[2]

The good work went on, for, on the eighth, twelve more of the crew were given the same medicine, despite the protest of the British Consul, the American Consul being at that time absent on leave. The remaining 102 of the unfortunates might have gone the same road as that traveled by their companions had it not been

[1] In his opinion delivered December 19, 1873, Mr. Williams, Attorney General of the United States, found that the *Virginius* had no right to fly American colors, by reason of her unlawful registry in the United States.

[2] If any of my readers having access to a copy of that useful book of reference, the *Register of Graduates of the Naval Academy*, will turn to the second class graduated from the Academy—that which entered in 1841—they will find that graduate No. 148 was Joseph Fry and get the further information that he "res. Feb. 1, '61, Lt." and further that he was "killed, Nov. 7, '73, Santiago de Cuba." Joseph Fry was the captain of the *Virginius*.

THE SINKING OF THE "VIRGINIUS" OFF CAPE FEAR, N. C., ON DECEMBER 26, 1873
From a sketch made from the deck of the U. S. S. *Ossipee* by Lieutenant Commander Gouv. K. Haswell, U. S. N.

for the timely arrival of the British sloop-of-war *Niobe,* Captain Sir Lambton Loraine. With his ship cleared for action and guns loaded, Sir Lambton protested against the further illegal butchery of helpless prisoners. This prompt action put an end to the slaughter. The survivors were incarcerated in Moro Castle for a time and ultimately turned over to the U. S. sloop-of-war *Juniata,* Commander Braine, by which they were transported to New York, where the Cuban Junta took charge of them.[3]

To continue the story of the *Virginius* it seems to me that I can do no better than insert a paragraph from Maclay's *History of the Navy* (p. 41).

> If possible, the outcome of this affair was more disgraceful to the United States than the outrage itself. After long correspondence the Spanish Government disclaimed all responsibility for the shooting, agreed to pay an indemnity of eighty thousand dollars, "punish those who have offended," surrender the *Virginius* and salute the American flag. General Burriel, the really culpable official in the transaction, was "punished" by speedy promotion. The *Virginius* had been carried in triumph to Havana, where she had been received with every demonstration of delight, but it was not at Havana that the flag was rehoisted and saluted. She was taken to the obscure port of Bahia Honda, where the only witnesses of the international ceremony were the hills of the bay and a few fishermen who knew nothing of its significance. When the Americans took possession of the *Virginius,* they found that she had been purposely defiled and rendered filthy, and left in such an unseaworthy condition that she sank on her way north.

The *Virginius* was turned over to the U.S.S. *Despatch* at Bahia Honda on December 16. From the *Despatch* she received a crew of about forty men and three officers, Lieutenant A. Marix, Master[4] G. A. Calhoun, and Second Assistant Engineer N. H. Lamdin. The run from Bahia Honda to Dry Tortugas, Florida, where the *Virginius* had been ordered, was quickly and easily made, the water being like a mill pond. The *Despatch* convoyed her. Arriving at Dry Tortugas, the sloop-of-war *Ossipee,* Commander Watters, was found at anchor awaiting her. Lieutenant Marix was relieved of the command of the *Virginius* by Lieutenant Commander D. C. Woodrow, the former returning to the *Des-*

[3] I joined the *Juniata* in April, 1874, and was told by one of the officers in her at the time she took these survivors north that they were nearly all Cuban "patriots," and a sorry lot, with undesirable habits, and it was a great relief when New York was reached and they could be got rid of.

[4] This title was changed to that of lieutenant, junior grade, by Act of Congress, August, 1882.

patch. The following named officers of the *Ossipee* were also detailed to the *Virginius,* First Assistant Engineer A. Kirby and Midshipmen F. H. Tyler and E. B. Underwood.[5]

The *Virginius* had been turned over to us by the Spaniards in sorry shape. She was dirty in the extreme, leaked badly, her hatches had disappeared, the companionways had been shattered, compasses smashed, furniture broken and damaged. The tanks in the toilets were of lead and each had been laid open by the blow of an axe or hatchet—wanton acts of Spanish vandalism. Clocks and gauges had been taken down, gutted of their works, then filled with unmentionable filth and returned to their places. The ship was alive with cockroaches—the large, tropical kind, the kind that fly at night and can be heard to bring up with a *thud* against a bulkhead. Tyler and I found billets for our mattresses on a transom at the extreme after end of the cabin, close to the rudder casing, but the second night out a following sea broke in one of the after deadlights, and we were driven, with wet mattresses, to the cabin floor.

Working parties from the *Ossipee* and the *Despatch* were sent aboard the *Virginius* as soon as she arrived at Dry Tortugas and they did everything possible to fit her for the trip north, including coaling her from a coal schooner that had been sent there to meet her. There were two serious defects, however, that could not be greatly remedied, one being the broken down condition of the boilers that had evidently deteriorated greatly in the desperate attempt to escape from the *Tornado,* and the other being a serious leak in the port bow, which kept the forward compartment about one-third full of water. There was no way of pumping this out, the limber holes in the forward bulkhead having been plugged in order to prevent the water from reaching the fireroom and putting out the fires. Bailing seemed to have no effect upon it.

However, after a fashion, defects were remedied and repairs made, and at two o'clock in the morning of December 19 we started for New York, all hands praying that good weather might be our portion. The *Ossipee* towed us with a twelve-inch manila hawser, at a scope of about 400 feet. We were able to raise steam sufficient to keep the pumps going and barely to turn the engines

[5] Tyler and I had left the Naval Academy the previous spring and were making our first cruise after graduation.

over. At first the sea was smooth and we were able to keep the water down with our main engine pump, but as Lieutenant Commander Woodrow said in his report: "As we proceeded north and the sea arose, the working of the ship gradually loosened the rivets of one of the bow plates, an old patch on the bow became loose and she leaked so badly that I had to plug the limber holes in the forward bulkhead to keep the fireroom clear." On the twenty-second we lightened the ship by throwing overboard the port bower anchor and heavy weights stowed in the forehold, such as wire rigging, chain cables, and the like. On the twenty-third we had from nine to ten feet of water in the forward compartment, the bulkhead of which protruded like the stomach of a high-liver. We made some props out of baulks of timber and wedged them against the bulkhead, thereby relieving it of some of the pressure, but we were in momentary fear that it would give way and allow the water to rush aft and put out the fires. All this time the wind was getting up. On the twenty-fourth we signalled our precarious condition to the *Ossipee,* which headed in toward shore, in order to get into smoother water. On the morning of the twenty-fifth, the wind having increased in violence, the *Ossipee* ran in and anchored on the Frying Pan shoals, on the coast of North Carolina, with eighty fathoms of chain, in eight fathoms of water, the *Virginius* riding to her hawser astern. That was a dreary Christmas day for us—anxious in mind, worn out in body, all clothing and bedding soaked, and no food except ship's provisions badly cooked and poorly served.

At four o'clock in the morning of the twenty-sixth our last boiler gave out and the water began to rise in the engine room and flood the fires. We then signalled to the *Ossipee* to take us off. At that time the forward compartment was full of water up to within a foot and a half of the spar deck, there were four feet of water in the forehold, and the water was over the grate bars in the firerooms. Nothing could now save the vessel, and at daylight the *Ossipee* shortened in the tow line so as to bring us within about 100 feet of her stern, and one of the cutters in charge of a skilful and experienced officer (Lieutenant W. W. Rhoades) was veered down along the hawser till she got under our bows, when our people, taking advantage of each "smooth time," were lowered into her by bowlines. It was slow work, the cutter having to make five trips.

However, we all got safely aboard the *Ossipee,* but we lost all of our effects.[6]

The first thing I did on reaching the *Ossipee* was to have a bath and get into some dry clothes, eat a civilized breakfast, and then turn in for a good sleep. I was up, however, in time to see the last of the *Virginius.* At 4:17 P. M. she went down, bows very much in advance, her stern rising high in the air. As the water rushed into her after compartment and cabin, the poop deck burst with a loud explosion, and she sank rapidly from sight.[7] When she reached bottom, she settled on an even keel, and the fore topmast went by the board, leaving the foremast head a foot or two out of water. As she was about to go down, the towing hawser had been cut and a buoy made fast to the end of it.

At five o'clock, although a terrific gale was blowing, the *Ossipee* got up anchor and started for New York. It was a mercy that the *Virginius* was not still in tow, for in that wind and sea, with no sail power and practically no engine power, she would inevitably have been lost with all hands.

The *Ossipee* reached New York at noon of December 30, and we then learned that the United States ownership of the *Virginius* was more than doubtful, and it was openly charged in the Spanish newspapers and covertly hinted in some of our own that she had been purposely sunk in order to relieve the government of an embarrassing situation. Of course these charges were baseless, as everything possible had been done to get her to New York, but the effort was hopeless from the beginning, unless—which was not likely at that time of year—we had had an unusually protracted spell of unusually fine weather.

We soon got orders to proceed to Washington, where the custo-

[6] Under the then current Navy Regulations, each member of the enlisted force of the *Virginius* automatically received a credit of thirty dollars on his accounts. This "bag money" was supposed to be sufficient to replace lost clothing and bedding. Under the same regulations, the officers were entitled to not in excess of a month's pay, but each one had to make claim on the Treasury Department, submitting an itemized and sworn-to list of articles lost. I followed this procedure, and months later received a Treasury Department draft for $83.33, the same being a month's sea pay for a midshipman after graduation.

[7] On seeing her go down, I think my first feeling was one of exultation that her colony of cockroaches had at last got its "come uppance."

mary inquiry following the loss of a naval vessed was to be held. The inquiry resulted in a manner entirely favorable to our officers and men concerned. When it was over, the *Ossipee* was orderd to Norfolk, from which place she had to tow a monitor to Key West, there to become a unit in the mobilization taking place, the *Ossipee* herself becoming another.

The "*Virginius* affair" was one of the beginnings of the resentment in this country against the Spanish conduct of affairs in Cuba—a resentment that grew until it finally culminated, a quarter of a century later, in the Spanish War, which resulted in the ejection of Spain from Cuba, let us hope forever.

NOTE: The question of the legal *status* of the *Virginius* is both interesting and complicated; any one desiring to read a discussion thereof is referred to Hyde's *International Law*, vol. 1, pp. 114-116.

"BLOOD IS THICKER THAN WATER"

By Willard C. Tyler

IN THE *Professional Notes* of the Proceedings of the Institute for September, 1924, under the caption of "Great Britain" there is a sub-heading as above. There follows an extract from the *Naval and Military Record* quoting the famous dictum although mis-spelling the name of our gallant officer who gave utterance to it and who little dreamed that it would persist as long as the Anglo-Saxon race survives. The *Record* draws a parallel between this saying and a recent incident, also in Chinese waters, when an American, named Hawley, in the employ of a British firm in Shanghai, was murdered by junk men at Wan-hsien. As set forth in this quotation, when Commander Whitehorn of the British river gunboat *Cockchafer* heard of the outrage he at once proceeded to the spot and compelled the Chinese authorities promptly to execute the two junk men most involved in this crime; also to march in the funeral procession of the murdered American and to eat humble pie in various other ways. This he brought about by training the guns of his ship on the town and threatening to blow it into the sky if his demands were not instantly complied with.

In this day and generation but little is actually known as to the exact origin of this immortal phrase, as nearly all the actors in that far away drama have since passed on. It happens, however, that the writer was privileged to hear the story in the year 1899 from the very British officer to whom the utterance was made by our Commodore Josiah Tattnall, who had served as a midshipman on the *Constellation* in both the War of 1812 and our war with Algiers in 1815; he was in the *Powhatan* with Perry at the signing of our treaty with Japan, and in our Civil War attained much prominence as commodore on board the *Merrimac* in her fight with the *Monitor*.

Early in December, 1899, it was my good fortune to sail from Southampton to Colombo on the P. & O. steamship *Rome* and

among my fellow passengers was the senior admiral of the British Navy, Sir Henry Keppel, better known as Sir Harry, and of course retired, as he was then ninety years old and still going strong, for he lived to be ninety-five before death came to him. He was a son of the fourth Earl of Albemarle and had been in the service for sixty-five years under four sovereigns, George III, George IV, William IV and Victoria. The old admiral was of small stature with beady, black eyes, still bright and alert, and with a wonderful memory, especially for the many events of the earlier part of his long career. His hair was white as snow, worn rather long, and he was smooth shaven. I was the only passenger he took any interest in and we spent many hours up on the boat deck, during which he told me of fights and expeditions he had participated in all over the world. His narratives were most interesting, especially as he greatly admired our naval officers, with whom he had been much in contact during so many years.

This led him to relate to me the true story of the Chinese incident which led up to the historic utterance which heads this paper and just how it came about. He was excellent authority on the subject for he happened to be the British officer to whom the declaration was made by Commodore Tattnall. In 1857 or 1858 the British Government felt that it had reason for punishing the Chinese by attacking their forts at the mouth of the Peiho River and assembled a squadron off there, with a lot of troops on board for that purpose. The day came for the attack and the British commander sent in about all the boats of his fleet, filled with soldiers and sailors to land, as he supposed, under the sea wall of the forts, so as to carry them by assault. Through ignorance of the character of the shore line, this force was landed on what looked like the mainland but what was really a mud bank separated from the true shore by a body of water known as the Fatshan Creek. This was not very wide but was of a muddy, sluggish nature, probably with a sticky mud bottom and of unknown depth. The Chinese, seeing the mistake of the invaders, promptly took advantage of it, opening a galling fire from the higher walls of their forts which mowed the Britishers down without their being able to do much execution in return. Incidentally, the Chinese shot most of their boats to pieces, for the mud bank was not very wide.

The situation of the landing force was truly desperate, with

every prospect of their being shot down to a man in the course of time. Commodore Tattnall, with several of our ships, was lying off shore just out of range, watching the conflict. Seeing the slaughter of the British and foreseeing their probable extinction in their helpless position, he ordered all the boats of his squadron away and sending them to the sea edge of the mud bank embarked the remaining Britishers and conveyed them around the end of the mud bank, landing them on the real mainland. Here they quickly formed up and soon after carried the principal forts by assault.

When it was all over, the British commander, Sir Henry Keppel, went off to the American flagship to express his gratitude for being helped out of so tight a place. It happened that this vessel was named *Toeyan,* probably a chartered Chinese steamer, perhaps on account of her light draft, for this entire coast is notoriously shallow. Also she had run aground a few days previously and had been helped off by some British warships. Possibly this incident left some feeling of gratitude in the bosom of our commander; who knows?

When Sir Henry met our commodore he expressed his sincere thanks for what had been done for him and went on to say that he marveled the more at it, because the United States was at peace with China. To this Commodore Tattnall replied that blood was thicker than water, and that he could not stand to see the British shot down without their being able to fight back decently. This, he considered, justified his intervention. Sir "Harry" had admired American naval officers ever since, which meant about half a century.

It is possible that George III, when receiving the first American Minister (about 1784), could have had prophetic vision when he said, among other things; "I have always said, as I say now, that I would be the first to meet the friendship of the United States as an independent power. Let the circumstances of language, religion, *and blood* have their full effect."

The old admiral told me many other interesting experiences of his long career and one of them concerned the long dispute between the British Government and ours, over the settlement of the northwestern boundary of the United States or more specifically where the northern border of (the then) Washington Territory should be fixed. This almost brought us into war with Great Britain, but

it was happily averted. I believe very few of the present generation have any clear ideas of the situation at that time and one of Sir Harry's stories presents an amusing situation which grew out of it.

As finally determined, this boundary begins out in the strait of Georgia, inside Vancouver Island, and comes ashore at latitude 49° N. which it follows exactly for about 260 miles due east to the western border of Idaho, where it continues as the northern limit of that state. South of 49° the dividing line follows the Haro Channel southerly, and the strait of Juan de Fuca due west, fairly near the middle of these waterways. In fact, the dispute began in 1847 over the Haro Channel and waxed in fury until 1859 when war was openly talked about. Our populace, then as now, worked itself into a rage over this matter concerning which it had little real knowledge and gave birth to the slogan, "Fifty-four forty or fight," which must have been very embarrassing to our government.

Somewhere about this time Sir Harry Keppel came to the coast of British Columbia in command of three warships. He, as well as everybody else in that remote region, was far from anywhere. There were no overland railways, no telegraphs, no means of communication with any government excepting by sea, taking months for a message to reach its destination, during which period important changes might have occurred in affairs. Soon after the arrival of the British squadron, it was enveloped in a dense fog which lasted well into the next day. When the fog finally lifted an American frigate was discovered some miles to seaward, all of the warships being becalmed at the time.

Sir Henry decided to pay a visit to the American captain to see if he could hear any news about the state of affairs, especially pertaining to the boundary dispute, so he ordered away a boat and in time came alongside our ship. To his astonishment he found no gangway over the side to receive him and was obliged to request that one be put over so he could come aboard. When he arrived on deck he was greatly surprised to find all the guns run out, round shot piled on deck, the men at their battle stations and the ship cleared for action. When our commander received him in his cabin Sir Henry said, "Isn't this a peculiar and rather unfriendly way for you to receive an officer from the warships of a nation with which you are at peace?" "Waal," drawled the American commander, "I didn't know whether it was peace or war,

so I thought I wouldn't be caught with my breeches daown." Admiral Keppel laughed heartily as he told me this story and said that he learned later that our man came from Nantucket.

This dispute became so bitter that finally the two governments entered into a sort of protocol by which the tentative boundary (presumably 54° 40″) was occupied by the troops of both nations until the matter should be settled. This condition of affairs must have lasted for many years, for it was not until 1871 that it was agreed to submit the contention to arbitration and the German Emperor was chosen arbitrator. He did not make his decision known until in 1872, when William I gave us the boundary which exists today. This must have been one of the very earliest instances where the United States left a dispute of such far reaching importance to be settled by arbitration, and abided by the decision.

The existing boundary is, of course, known to all of our naval men, but let us consider for a moment where 54° 40″ would have left us had we been awarded that degree of latitude for our northern boundary. This line would probably have run due east until it reached Lake Winnipeg at about its center, which would have given us about half of British Columbia, Alberta and Saskatchewan, together with a goodly portion of the western half of Manitoba. From Lake Winnipeg it would probably have dropped gradually down to Lake Superior, as the boundary east of the former lake was already established, or practically so.

On the Pacific Coast, such a decision would have been a very serious matter for the British Government and the Canadians, as 54° 40″ would have taken us up to the present southern border of Alaska (then Russian) and the Dixon Entrance, shutting Canada off from the Pacific except by passing through United States waters to get in and out of the Portland Canal. In such case Vancouver, Victoria, Nanaimo and all of Vancouver Island would have been ours, as well as all the islands to the northward along Queen Charlotte Sound. By this award of the German Emperor we lost about 450,000 square miles of additional territory.

Today, with the shadows of the Great War still resting upon us, is there anyone who wishes that we had started a long bloody, fratricidal war with the other half of our own race, over this far northern territory which even at the present time is mostly wilderness, or very sparsely populated?

ADMIRAL COLUMBUS

By Commander L. J. Gulliver, U. S. Navy

"YOUR Holy Majesties have graciously given your approval of my voyage across the western ocean in order that I may find a short route to the Indies. Yet I must beg your Majesties one more royal favor. I ask before I set sail that you shall appoint me admiral of all the ocean seas. This shall be the mark of your faith in me." So spoke in substance Admiral Christopher Columbus, to King Ferdinand and Queen Isabella of Spain on the eve of his departure from Palos, August, 1492. In these words which actually amounted to a demand Columbus revealed that phase of his character of which he was most proud and which was the very foundation stone of his discoveries.

Columbus was a sea captain, unquestionably the greatest in the history of the sea. If he hadn't been, he could never have safely crossed the trackless Atlantic, or, granting him luck enough to take him to San Salvador, he could never have gotten home to tell the world about what he had done unless he was possessed of a seaman's instinct fortified by the iron will of the sea captain who fights the hungry Atlantic and balks her.

The great courage of the Admiral; his sublime faith in his ability to discover new lands across the seas; his consuming determination; of what avail are all these alone when the curling, snarling waves of a storm at sea lash about the low decks of his frail caravels. Then it is the sea captain who must conquer or sink to a grave in the depths of the sea.

Admiral Columbus bested the Atlantic not once but many times. Eight crossings he made, four westbound and four eastbound, totaling with his cruises among the islands of the West Indies and along the coasts of Central America more than 30,000 miles. All this he did without the loss of a ship or the loss of a man. These constitute his claims to fame as a seaman and a captain of a ship.

Go down to the beach at the seaport of Palos and watch the Admiral prepare his flagship, *Santa Maria,* for the great voyage. She is the poorest craft there and requires much work to make her at all seaworthy. More than this she is "a dull sailor, unfit for discovery" according to the Admiral's description of her entered in his log. You will notice with astonishment that she is decked over only in the bow and stern. The midship section is an open well. The *Santa Maria* is only ninety feet long. Into this vessel an ugly looking crew are piling sea stores for fifty-two men. Casks upon casks of Spanish wine, coarse sea biscuits, bales of dried fish and sun cured meats. The Admiral is watching this work carefully. It is the sea captain's job to guard against overloading, but he must see to it that enough food and wine go along to the end that no lack of these shall cause him to turn around in mid-Atlantic and head for home.

As evening falls the Admiral is seen testing his compass which he calls the "Needles." The test consists in seeing if the needles point to the North Star. He next examines his astrolabe. This crude instrument is designed to measure the altitude of the North Star but as the Admiral wouldn't know how to use the altitude of the North Star if he got it, he is of no mind to worry over the grave inaccuracies of his instrument. Don't expect the Admiral to compare his watches and clocks because he has none, nor will he adjust his patent log for reading the ship's speed for the same reason. The "Pointers" of the North Star rotating around the North Star are the only time keepers he knows about and for estimating his speed through the water he is accustomed to stand on the forecastle and toss a chip of wood into the sea and to pace this as it floats to the stern—a known distance at an estimated walking speed.

The sails of the *Santa Maria* were made of woven cotton, a tough, durable fabric we must assume, since the admiral makes no mention of its causing him any concern. The rigging was hemp. This material likewise was satisfactory.

The *Santa Maria,* from a seaman's viewpoint, was badly overmanned. Of the fifty-two men crowded into a craft ninety feet long and displacing only 100 tons, fully thirty-five were excess baggage, taking up space that ought to have been used for sea

stores. This excess, too, made three daily inroads into the very heart of the expedition—sea stores. The Admiral's excuse for this must lie in the concession the seaman has to make to the needs of a military commander headed for a strange and hostile shore.

Columbus' seaman's ability to make his own repairs was tested by the rough sea kicked up by the strong southwest breeze that carried him to the Canaries. Before he reached these islands the steering gear of the *Pinta* gave way. This the Admiral remedied so thoroughly that no further trouble came from it during the entire voyage.

From the Canaries to the Indies the Admiral deemed his course to be westerly. This required winds from well abaft the beam as the craft did poorly in windward sailing. Here the seaman's instinct in Columbus guided him to the region of the favoring trades. This was not luck. It is to be noted that he kept clear of the impossible route to the west via the British Isles.

The log of the *Santa Maria,* written up each day by the Admiral, reveals the seaman's watchful scrutiny of wind, course, distance, and state of the sea and weather. For example he wrote on September 13: "That day and night steering their course which was west, they made thirty-three leagues (ninety-nine miles). The currents were against them. On this day at the commencement of the night the needles turned one half point more northwest."

From this observation the Admiral is credited with the discovery of the variation of the compass. This change escaped the notice of the other captains in the fleet until it was called to their attention four days later.

On September 14 the Admiral wrote: "That day they navigated on their west course day and night twenty leagues. A tern and a boatswain bird were seen."

On September 25: "The Admiral ordered the course changed from west to southwest. That day they made four leagues on a west course and seventeen on southwest during the night. The sea was smooth and the sailors bathed alongside."

On September 30: "The western course was steered and during the day and night only fourteen leagues were made. The stars which are called the guards, when night comes on are near the

northeast point so that during the night they move only three lines which are nine hours."

Ever watchful of the sea and atmosphere and ready to profit by what he saw and learned Columbus was the first to recognize the hours of greatest visibility at sea and to take advantage of fleet assembly at dawn and sunset. This is shown by his log written on October 17: "The west course was continued. They made good twenty-three leagues. The Admiral had ordered that at sunrise and sunset all ships should join him because those two times are most proper for seeing the greatest distance, the haze clearing away."

The westerly courses and the distance sailed; these are the daily entries in the Admiral's log that came first in his attention. They express the very essence of a sea captain; they thrust all other matters into the background. Concentrated on the direction the ship was steering and the miles made good he had no mental wanderings into the speculations of discovery. His mission was to get his ship safely and quickly over the ocean and into port.

After the landing at San Salvador the fleet, led by the *Santa Maria,* traversed the Crooked Island Passage. Observe, from the following abstract from the log, the Admiral's seamanship in sailing through this pass.

I had laid by during the night with the fear of reaching land to anchor before daylight not knowing whether the coast was clear of rocks, and at dawn I made sail. As the island was not more than five leagues distant and nearer, and the tide checked my way, it was noon when we arrived at said island. As from this island I saw another larger one to the west, I clewed up the sails after having run all that day until night; otherwise I could not have reached the western cape. I gave the name Santa Maria de la Conception (the Rum Cay of today) to this island and almost as the sun set I anchored near the said cape to ascertain if it contained gold.

October 19: I weighed the anchors at daylight sending the caravel *Pinta* on an east southeast course, the caravel *Nina* south southeast while I shaped a southeast course giving orders that these courses were to be steered until noon and that the two caravels should alter course to join company with me. Before we had sailed three hours we saw an island to east for which we steered and all three vessels arrived at the north point before noon. Here there is an islet (Bird Rock), and a reef of rocks to seaward of it besides one between the islet and the large island. The men of San Salvador whom I had with me call it Saomette and I gave it the name of Isabella (Crooked Island).

Having safely led his fleet through this rock strewn region the Admiral sailed along the northeast coast of Cuba for about 200 miles examining bays, harbors and the mouths of rivers all without a mishap.

Homeward bound from Haiti in midwinter, 1493, Columbus was face to face with head winds, the easterly trades that had borne him to San Salvador. It was at this point that the Admiral's fine seaman's instinct led him directly to the solution of his difficulties. Wasting no time in hoping for a change of direction in the easterly trades or strength in attempting to buck head winds, he headed north. His seaman's sense told him that not far away from the sea region of steady east winds there must be a region of winds nearly opposite in direction. Not many days later the fleet was steering due east on the lift of a quartering breeze.

The Admiral's greatest test as a sea captain was to come before his fleet was to sight the welcome shores of Portugal. Midwinter storms of the Atlantic began pounding his vessels. The climax came in a lashing gale that only the supreme seamanship of Columbus could have enabled him to live through. Six days and six nights the storm raged against the Admiral's frail craft. With a seaman's prevision of the gale he had snugged everything down. Under bare poles topped by a lighted lantern at night, the fleet was driven on to an anchorage in the Azores. The seamanship that had guided his ships to San Salvador brought them home to tell of it.

In the three voyages to the West Indies and return following the discovery of America, the Admiral, steering a different route each time, always fetched up in the harbor at San Domingo. This resulted not from navigation, for he knew none, but from seamanship. On his third voyage, in 1498, Columbus sailed through the dangerous currents of the "Serpent Mouth" and the equally dangerous "Dragon's Mouth" separating Trinidad from the islands of the promontory of Paria.

Admiral Columbus had the seaman's eye and the seaman's sense. These he had built up from years on the sea and sharpened to a degree never equalled before or since. We can picture him gazing on sky and sea and wind, reading the coming weather with in-

variable exactness and backing up his judgment with action suited to the needs of his ship. No barometer nor ocean wind charts, nor knowledge of the region of trade winds or sources of gales helped Columbus. The seaman in him enabled him to divine the face of the sea as no man before him had ever done.

Historians tell us that the discovery of America was born out of the faith of Columbus in his vision of lands in the west, his courage to cross an ocean (to his mind of fathomless depth) and his courage to go on in the face of all difficulties. Those to whom the Admiral's supreme mastery of the seaman's art makes its appeal like to believe that it was not Columbus, the discoverer, who found America but Admiral Columbus, seaman and sea captain.

DISCUSSION

Indoctrinating Civilians in Matters of Naval Defense

(See page 1854, November, 1924, PROCEEDINGS)

BY BROCKHOLST LIVINGSTON

Lieutenant Daniels has covered the subject of indoctrinating civilians in matters of naval defense most thoroughly. His article is opportune at a time when the only civilians who seem to bother with matters dealing with the Navy are, generally, persons who are hopeful that they may thus advance their personal ideas. Often these ideas are based upon decidedly false interpretations of naval matters.

Our newspapers in the "Sunday Supplements" mentioned by Lieutenant Daniels do give to the public a slight knowledge of naval affairs. They are, as he also states, "apt to be either untrue or so garbled as really to result in giving out misinformation." This regrettable state is brought about through the lack of actual and useful information on the part of newspapermen. It is due, partly, to the retiring disposition of the average naval officer. Captain Knox in his book on the Conference states: "American naval officers have long since formed the habit of ultraconservatism in regard to publicity. . . . The swarm of correspondents, having little technical knowledge themselves, and being denied the only source of correct information, naturally depended on the only other sources available. . . ." The naval officer is our only assured source of information, and consequently he must come to the fore with his knowledge that we may rid ourselves of others who are only too ready to make representations harmful to the interests of the Navy.

Truth and a clear interpretation of naval matters are among the principal requisites for one who attempts to divulge navy news for future publication.

We need not wait until the university is reached before the study of war is begun. Our public schools furnish us with a powerful medium through which the youth of the nation may be reached and taught the principles and causes of war.

Lieutenant Daniels' statements as to cooperation between the naval forces and our diplomatic corps are, by far, the best feature of his instructive paper. It is high time now that the two branches of government recognize in each other a bond which must be rendered secure by the utmost coordination. The diplomat must cease to see in the naval officer, as the naval officer must no longer see in the diplomat, nothing but a medium of sociability and enjoyment. Upon these two services rests the security of the whole nation. Each must know the principles of the companion service.

Diplomacy is taught the naval officer but the diplomat has not, as yet, been indoctrinated in naval strategy.

The school for diplomats has yet to be established but there are several hundred men already in our foreign service who lack the teaching in naval matters which this school should embody. Offer these men the chance to study the Navy through the War College and they will be only too glad to avail themselves of the invitation. To the younger men, the correspondence courses of the War College would not only teach them the naval matters with which they should be acquainted but also would provide them with much that would be beneficial to them in the preparation for future examinations in their service. It would go far toward supplying the school for diplomats.

We may look back upon the late Conference for Limitation of Armaments and blame the loss of the right to fortify our insular possessions upon statesmen who lacked training in naval strategy. The technical advisers supplied cannot always be convincing. One's personal knowledge of the subject can do much more. It shows him, directly, the course which he should pursue. The work of cooperation between diplomat and naval officer is not over. It is but beginning and becoming apparent to the onlooker. Lieutenant Daniels has made the first step in an essential move.

Seagoing Aircraft

(See pp. 1795-1801, November, 1924, PROCEEDINGS)

LIEUTENANT F. P. SHERMAN, U. S. NAVY.—After carefully reading Lieutenant Commander Ballou's article I can not but feel that it unduly minimizes the effectiveness of the aircraft which can accompany the treaty fleets. He states on page 1796, "Aircraft which can be carried on the treaty fleets are relatively few in number and will be launched singly and unhandily." It is becoming fairly apparent that the 135,000 tons of aircraft carriers allowed by the Washington Treaty could, with the help of catapults on capital ships, cruisers, auxiliary vessels and submarines, carry many more airplanes than the country will afford to maintain or provide with personnel and incidentally a number by no means small.

As for launching planes singly, a unit of three fighting planes can take off in formation from a carrier deck, while all the catapults in the fleet can, if necessary, launch their planes simultaneously on signal. By crossing the deck of a large carrier in echelon with the wind on the bow it may even be possible to take off a complete fighting division in the air in formation.

Aircraft search operations on the high seas will, except in rare cases, be carried on by planes operating from an aircraft carrier or by planes catapulted from cruisers. The use of the latter must necessarily be confined to weather in which the planes can land in the water and be picked up, so this one consideration will greatly decrease their use. It seems most probable that cruisers will usually conserve their catapult planes for use after making contact when their value will be so much greater, instead of

using them in search operations where one bad landing in rough water or forced landing away from the ship may expend both plane and pilot. Our best scouting planes are at present the *CS*, *DT* and *PN* types. The *NC* is obsolete and none are in service, the *F-5-L* is obsolescent. The *CS* and *DT* type planes have been operated from the experimental carrier. The serviceability of the *DT* type has been recently demonstrated by the Army Around the World Flight, in which the planes used were *DT's* modified by the substitution of extra fuel capacity for the offensive armament. A *DT* with full load including 1,600 pounds for a torpedo has been flown off the U.S.S. *Langley* at anchor and it is reasonable to expect that a larger plane can lift a 2,000 pound bomb off the *Lexington* and *Saratoga* when underway. One must, therefore, disagree with Lieutenant Commander Ballou's statements on page 1797.

The scheme for using the planes of scout cruisers to bomb enemy carriers seems rather impracticable if one realizes that these planes are small observation planes already charged with carrying pilot and observer, fuel, radio, defensive armament, and with the duties of tactical scouting and spotting cruiser gunfire. These small two-place observation planes, if equipped with the additional matériel necessary for successful bombing, would indeed be sluggish, vulnerable targets for a hostile fighting pilot.

The aim and tendency of modern thought on aerial tactics is toward formation fighting. The day of the individual ace is about gone and in future wars we may expect to see the aircraft work in formation just as much as the surface craft. Other things being equal the victory in an aerial fight will go to the side which fights in formation and thus concentrates its masses on enemy fragments. Fighting formations are usually multiples of three plane units since three plane units are the easiest to handle and the most efficient. Larger units lose the power of rapid collective maneuver. The greatest living free lance fighter, René Fonck, said on this subject: "I prefer the group of three; the leader with a plane on each wing. I usually fly in a group of three. I like to have other groups of three placed so that they do not impede each other's maneuvers, yet close enough to receive signals, and to lend support at crucial moments."

The question raised on page 1801 of the relative value of bombers and pursuit planes to the superior fleet is a most interesting one. Given a force of bombers on the decks of enemy carriers, which is best, to meet them in the air with our pursuit strength or to bomb them and their carriers? It seems both practicable and advisable for the superior fleet to take the aerial offensive, to attack from the air with bombs, torpedoes, machine guns, every enemy carrier and thus destroy the enemy air offensive before it is launched. Experience has shown that the interception of an enemy bombing formation in the air is by no means easy.

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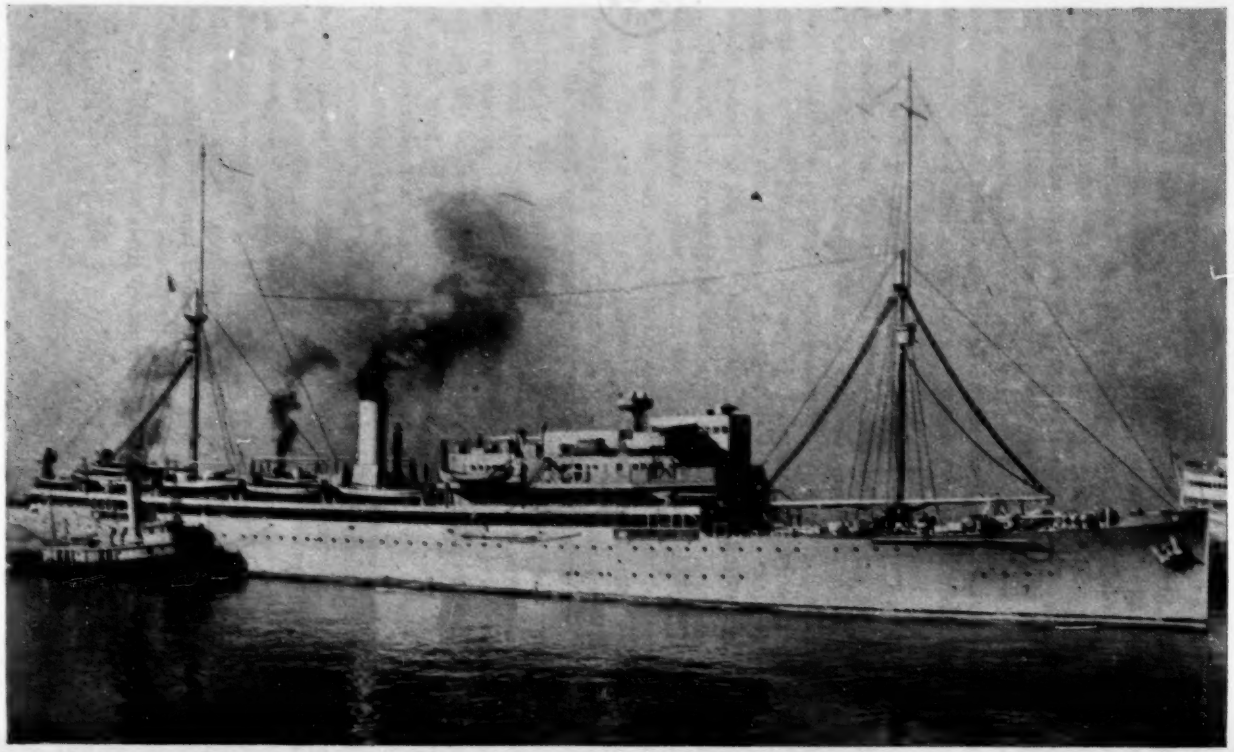

U. S. S. "Dobbin," Our Latest Destroyer Tender

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PROFESSIONAL NOTES

PREPARED BY

LIEUTENANT COMMANDER H. B. HIRD, U. S. NAVY

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GREAT BRITAIN

Cruiser Strength Held Vital to Great Britain

By Hector C. Bywater, Baltimore *Sun*, 11 November, 1924.—London, Oct. 15.—That the coming year will witness a fresh attempt to bring the world's armaments under international control seems practically certain. It is the desire of the League of Nations that a conference to this end shall meet at Geneva next June, by which time the executive of the league intends to have ready a detailed program of all-round reduction for the armies, navies and air fleets of the civilized powers. The work involved in the preparation of such a scheme must be colossal, and one can only hope it will not be a case of love's labor lost.

If the Washington Conference took more than two months to reach an agreement grading the naval strength of five powers—and then only in respect of certain types of ships—how long will it take the Geneva gathering to negotiate a compact which establishes a strict ratio between the land, sea and air armaments of more than twenty different countries? The task before the league council is one of inconceivable magnitude and it is not surprising that many should deem it impossible of achievement.

In the not unlikely event of the league conference failing to materialize it is assumed that the President of the United States will step into the breach and invite the powers mainly concerned to join in a parley at Washington; but whether in that case the discussion would extend to military and aerial armaments or be limited to naval forces alone is, at this juncture, purely a matter of guesswork. Of one thing we may be perfectly sure: The next disarmament conference, whether held in Geneva or Washington, must be conducted strictly on business lines if it is to lead to any useful result. Each of the powers taking part may be trusted to keep a vigilant eye on its own interests, and while oratory of the kind recently heard at Geneva may help to create an atmosphere of harmony at the beginning,

impassioned harangues on the evils of war and the blessings of peace will be out of place once the delegates have settled down to business.

The thorough-going enthusiast for disarmament has no patience with what he calls "side issues." So intent is he on the wood itself that he fails to mark the trees. It was curious to observe the petulance displayed by certain writers at the Washington Conference when Japan held up the proceedings by her refusal to part with the *Mutsu*. To them it seemed preposterous that the whole venture should be imperiled merely on account of a single battleship. To Japan, however, the matter appeared to be one of vital moment.

This incident points a moral which it would be rash to overlook. Whether we like it or not, technical questions are bound to assume a commanding importance at any new conference on armaments. Therefore, the more carefully they are studied beforehand, the less prospect will there be of deadlock and consequent exasperation when the parley has begun.

From hints dropped in Congress and various statements in the press the United States, it appears, would be disinclined to accept any further plan of naval reduction which did not put her on an equality with Britain in every class of ship. In other words, she wishes the 50-50 ratio to embrace minor craft, as was proposed in the original scheme submitted by Secretary of State Hughes at the opening of the first conference. Owing to the dispute over submarines, which developed later, this part of the scheme was shelved, and so the willingness or otherwise of Britain and Japan to have the 5-5-3 scale extended to cruiser, destroyer and submarine tonnage was never put to the test. We know only that Admiral Kato, the Japanese delegate, stressed the defensive character of such vessels and seemed averse to their limitation. The British attitude was not defined.

I have no knowledge of British official views on the subject, but it is evident from public utterances of officers of the Royal Navy that they attach the greatest importance to an adequate force of cruisers, and it does not follow that a force adequate for American needs would be considered sufficient for British requirements. Some American critics may object, nay, have objected, to comparisons being drawn between the war functions of British and American cruisers. All such discussion is beside the point, they contend. In this class of ship, as in every other class, it must be equality or nothing. Their right to this view is undeniable. Nevertheless, if all argument on the subject is to be ruled out from the start, there will be precious little hope of an agreement being reached.

In British eyes the chief function of the cruiser is to protect floating trade; its value as a unit of the battle fleet or other tactical formation comes second. This is as it should be, for the safety of her lines of supply in war time is literally a question of life or death to Great Britain. If American commerce were swept off the sea by enemy corsairs, the American people would suffer grave loss and inconvenience—but they would not starve. If the same thing happened to British seaborne commerce, nothing but immediate surrender could save the population of these islands from starvation. That, in a nutshell, is the British case for maintaining a numerous fleet of cruisers, and no reasonable person can deny its cogency.

Unofficial people here with whom I have discussed the subject say in effect: "Let us by all means agree to cruiser equality with the United States, but since these ships have such a vital bearing on our national existence in war, it is only fair that the fixing of a standard of strength in cruiser tonnage should be left to our discretion. It would be for our naval authorities to decide whether we need fifty, seventy-five or one hundred cruisers. Once the standard was fixed, it would be for America to decide whether she wished to build up to it. It is, however, manifestly unfair to propose that this country, utterly dependent as it is on food and material

from abroad, should accept a scale of strength based upon the smaller requirements of self-feeding and self-supporting America."

In an address to the naval and military Parliamentary committee at the House of Commons some months ago, Captain E. A. Altham, a retired officer of the Royal Navy, said that while the menace of invasion by sea may have decreased, "the danger of Britain being starved into submitting to a humiliating surrender has enormously increased." He went on to prove this contention by quoting some very striking figures relative to seaborne trade.

Taking only four vital commodities—meat, bread, wool and fuel—he showed that over fifty per cent of the beef and mutton consumed here is brought from overseas, twenty-five per cent coming from South America and twenty-five per cent from Australasia. More than seventy per cent of the pork, bacon and ham consumed is also imported, most of it from the United States and Canada. Only twenty per cent of Britain's wheat supply is home-grown; the remaining eighty per cent is imported, mostly from the United States. As for wool, ninety per cent of this comes from overseas. A serious shortage of any one or all of these commodities would cause widespread suffering, and such shortage would inevitably result if the ocean routes could not be kept open in war, for at no time are the stocks on hand sufficient for more than a few weeks' supply.

Oil has become an essential factor in the industrial life of the community, yet Britain, producing virtually none herself, must import the precious fuel in ships from distant lands. If this marine pipe line were cut, social and commercial chaos would follow. Defense would become impossible, for without oil neither the navy, the army nor the air force could move.

Britain's floating trade passes along four clearly defined routes—one to North America, one to the West Indies and the Mexican gulf, one to South America and one through the Mediterranean into the Indian Ocean and the Pacific. All these routes must be kept reasonably safe in war time if the volume of imports is to be maintained. Submarine attack on a serious scale is only to be feared at those focal points where the different routes converge on British ports—that is to say, in the narrow seas—and this menace can be foiled by the operations of destroyers, other light patrol forces and aircraft. Out on the broad ocean the ships bringing food and other commodities are exposed to attack by swift enemy cruisers, such as the *Emden*, *Karlsruhe* and other German raiders that made themselves famous in the war. During the first six months of that campaign nearly a quarter of a million tons of shipping was sunk by German surface raiders, and the losses would have been infinitely greater but for the British blockade in the North Sea, which prevented more enemy cruisers from breaking out into the Atlantic.

It is, therefore, easy to see why British naval men attach so much importance to the cruiser and why they demand a large force of such vessels. Many years back Rudyard Kipling wrote some verses, the truth of which became painfully apparent to people here when the war with Germany was raging:

> For the bread that you eat and the biscuits you nibble,
> The sweets that you suck and the joints that you carve,
> Are brought to you daily by all us big steamers;
> And if anyone hinders our coming—you'll starve!

To avert this peril Britain was exhorted to "send out your big warships to watch your big waters," and the safety of those "big waters" across which the food ships come and go is still the chief concern of British naval policy.

If Britain is invited at the next disarmament conference to accept equality with the United States in the one class of ship that counts for

most in the protection of floating trade, she may well hesitate to do so, having regard to the foregoing facts. The rational solution of the difficulty would be that already indicated: namely, that the allotment of aggregate cruiser tonnage should be left for Britain to decide, since her stake in the matter is unquestionably the greatest.

A Battleship Champion

Naval and Military Record, 15 October, 1924.—On much less contentious ground was Admiral de Robeck when he passed from a somewhat sketchy vindication of the Gallipoli campaign to the value of the capital ship. If Sir Percy Scott's very didactic little midshipman still has a kick left in him, he will probably utter another damned rejection of arguments which he cannot reason away. With emphatic vigor Sir John de Robeck bade his hearers not to pay heed to those people who said that the day of the capital ship has passed. Since no man of her era has had longer continuous service in battleships, both in peace and war, we have here an opinion which, at least, is based upon practical knowledge.

Very reassuring was the definite statement of Admiral de Robeck to the effect that if war were sprung upon us tomorrow we should no longer have the same fear of the submarine that we had in the early days of the Great War. Not without reason, the submarine has always been the most potent weapon in the armory of the anti-battleship school. The aircraft has been likewise freely quoted, but not, perhaps, with quite the same conviction of finality, since her rôle in this direction remains much more speculative. It appears to us that the real problem of the capital ship in the future naval war is not so much a question of her ability to resist underwater and overwater craft, but of the possibility of employing her actively at all. During the four years of the Great War only one battleship action was fought. For the rest, she was justifying her existence—on the British side—by the mere fact of her existence, in a passive vigilance which kept the enemy bottled-up in his lairs.

U. S. Navy Estimates

In reply to a question by Lieutenant-Commander Kenworthy, Mr. Ammon stated that "a reduction of £11,200,000 appeared in the American Naval Budget for 1925-26." Very shortly afterwards, in the course of the same answer, the First Lord said: "This estimate has not yet been presented to Congress, but if it were adopted the American Naval Appropriation would be the same as it was in 1924-25." Is it unreasonable to ask just where the "reduction" comes in? The United States Navy Estimates for 1925-26 have not yet been made public—indeed, like our own corresponding Budget, they are at present very much in embryo. At the same time, Mr. Ammon must have definite data in his possession to be able to give the figures he quoted, and we suggest that what he really meant to convey is that the original tentative proposals would have exceeded expenditure for the current year by the amount mentioned, but that these original proposals have since been revised, resulting in an Irishman's "reduction."

The fact is that, just at present, the United States is marking time in connection with her naval policy. It is rather difficult, in view of President Coolidge's repeated utterances on the subject of disarmament, to see how she can disregard what has been effected at Geneva. On the other hand, she is extremely unlikely to modify the principles laid down by successive Navy Secretaries until it is quite clear that Great Britain and Japan will consent to a further reduction of armaments. That the next British Navy Estimates will show any reduction is extremely improbable. Provision has to be made for the progress of two capital ships and five cruisers in

course of construction, and as it is manifestly absurd to build ships without providing crews for them, there can be no cutting down of man-power. While acquiescing in the beneficent doctrines of Geneva, the great naval powers will probably follow that course popularly known as "playing for time."

Colombo as a Base

Naval and Military Record, 15 October, 1924.—The appointment of Engineer-Commander W. S. Damant as resident officer in Colombo is of suggestive significance. It indicates the increasing importance which the Admiralty attaches to the port as a rendezvous for the ships of the East Indies Squadron, and there are even some who profess to find in it the germ of an alternative idea to Singapore. This, however, is quite a misconception. Apart from the fact that, in point of strategical value, there is no comparison between the two places, Colombo must always suffer from the disability that, in bad weather, its fine harbor is virtually impracticable to big ships. When the *Renown* was homeward bound from Japan with the Prince of Wales on board she was diverted to Trincomali because it would have been unsafe to attempt to make Colombo in the sea raised by the southwest monsoon.

Indeed, were there any idea of developing a substitute to Singapore—which there is no reason to believe the Admiralty even contemplate—choice would be much more likely to fall upon Trincomali. Its magnificent natural harbor is quite capable of accommodating an entire battle fleet, and it is impervious to the wildest bursts of monsoon weather. Colombo, of course, is a place of great natural attractions, and under normal conditions its harbor is accessible enough to the biggest ships, but it lacks the facilities of anything in the nature of a naval establishment, and the appointment of Engineer-Commander Damant may be a possible indication of Admiralty intention to create something in this way.

Churchill Urges Singapore Base

Washington *Star,* 4 November, 1924.—London, November 4.—Winston Spencer Churchill, who has just been re-elected to Parliament, is the first Conservative of possible governmental rank to advocate publicly the revival of the Singapore naval base scheme. This he did in the course of a political speech here last night.

Resumption of the plan to establish a great naval base at Singapore has already been advocated by several Australian newspapers.

The project for a naval base at Singapore at a cost of about £11,000,000 was brought forward by the conservatives in 1923. The naval estimates which were adopted in July of that year provided for the Singapore development.

In March of this year the Labor Government abandoned the plan, Premier MacDonald contending that world peace by agreement would be a more effective guarantee of security than strengthening or increasing naval bases and armaments. It was urged also by the laborites that the project was contrary to the Washington Agreement.

The Australian Government has always been strongly in favor of the Singapore plan.

The Singapore Naval Base

Washington *Post,* 7 November, 1924.—Last March when the British Labor Government announced simultaneously in both houses of Parliament its intention of abandoning the construction of the naval base at Singapore, there was in each chamber sharp criticism of the proposed action. The House of Lords, indeed, went beyond criticism and, by fifty-six votes to nine-

teen, adopted a formal resolution expressing "deep regret" at the giving up of the project. In the House of Commons a former first lord of the admiralty served notice that, when the Conservatives returned to power, their first step would be to resume the scheme without an instant's delay.

The reasons assigned by Ramsay MacDonald for his decision were, that to proceed with the base would exercise a most detrimental effect on Great Britain's foreign policy, would create mistrust and competition in armaments in the Far East, and would be contrary to the Washington Agreement. He also revealed that, of the various dominions consulted on the subject, Canada had refrained from giving advice, India had expressed no definite opinion, South Africa was wholeheartedly for the abandonment of the project, and Australia, New Zealand, and Newfoundland were in favor of its completion on the lines on which it had been begun.

That the Singapore naval base will soon become a question of prime interest, however, is indicated by the pronouncement of Winston Spencer Churchill on Monday last, in which he publicly advocated resumption of the work. Churchill, a Conservative by birth and training, left his quondam allies some years ago and after a rather hectic career, first as a Liberal and then as an Independent, he has returned to the fold and, as a Conservative, secured a seat in the new House of Commons. He has always been skillful in self-advertisement, and it is not without significance that he should thus early and publicly commit himself to a resuscitation of the abandoned project. It is evident that he considers that the trend of British opinion lies in that direction, and that there is much to be gained by becoming the leader in a matter that touches so closely on British national pride.

If there is any foundation of fact for former Premier MacDonald's arguments, as set forth some nine months ago, the question is one of international importance, and it will be interesting to see how far this aspect of it will have weight in the deliberations of Parliament.

British Conservatives and the League

Washington *Post*, 10 November, 1924.—Much speculation is rife as to the effect of the British elections, and the accession of a Conservative Government, upon British relations with the League of Nations, and particularly upon the British attitude toward that fearful and wonderful creation of the League known as the Protocol of Peace. That it will have some material effect is to be confidently expected. Conservative foreign policies have always differed from those of the Liberals, and must much more do so from those of the Laborites.

While the Labor party's policy is distinctly internationalist, that of the Conservatives is decidedly nationalistic and imperialist. Its prime aim is to maintain the integrity of the British Empire. So long as this is compatible with the ways and means of the League of Nations, the Conservatives will favor that body, but we cannot imagine them for a moment standing for the League against the interests of the empire. "Britain first," is their rule, and in maintaining the integrity and security of the British Empire a Conservative Government always regards the British fleet as an agency of indispensable and paramount importance. That it will be very chary about placing that fleet at alien command, for international police work all over the globe, goes without saying.

It is quite possible, too, that the shrewd and expert statesmen of the Conservative Government will perceive the extraordinary likeness which exists—of course quite accidentally—between the present and pending Protocol of Peace and that notorious act of the Holy Alliance which perhaps above all else provoked the United States to the enunciation of the Monroe Doctrine. It will be recalled that at that former time Great Britain

had no stomach whatever for the proposal of the Holy Alliance to meddle with the domestic affairs of other nations, particularly America, and apply coercion thereto. We should very greatly doubt whether the responsible British statesmen of today are any more inclined to attempt against America the intrusion and dictation which the Protocol of Peace pretty plainly implies.

We shall not expect Great Britain to leave the League of Nations. Neither do we look for the speedy collapse of the league, but we should be greatly surprised if the British Government sanctioned any course, policy or protocol making toward an offensive meddling in the domestic affairs of the United States.

Admiral Sir Percy Scott and his Work

The Engineer, 24 October, 1924.—In the closing years of the nineteenth century several events occurred to focus public attention on the subject of naval gunnery. The importance of accurate shooting by ships which had been built for the specific purpose of mounting powerful ordnance was apparent even to the lay mind. Unless a ship of war could use her guns with effect, she was obviously unfitted to take her place in battle. Yet at the period in question this vital branch of training was neglected. Though the gun itself had been enormously improved in power and precision, this improvement was not reflected in the results obtained at target practice. The fleet's percentage of hits to rounds rarely exceeded thirty, though the conditions under which practice took place were far from onerous. Critics ascribed this poor performance to the conservatism of the older officers, many of whom preferred a smart appearance of ship and crew to prowess in working of the armament. The destruction of Cervera's well-armed but poorly-trained squadron in the Spanish-American War of 1898 showed the terrible penalty of neglecting gunnery. No one knew how the shooting of the British Fleet compared with that of other navies, but it was evident that entirely new methods of training the man behind the gun would have to be adopted if better results were to be obtained.

Already in the early '90's Commander Percy Scott, of the *Excellent* gunnery school, was trying to introduce changes, both in routine and in the mechanical aids to marksmanship, which he held to be essential to greater efficiency; but it was not until he became captain of the *Scylla*, in May, 1896, that he was free to give his ideas full play. In his own words, "gunnery was a difficult problem to attack. There were no efficient targets, the gun sights were bad, and the expenditure of ammunition had to be carried out at stated times and under conditions that afforded little scope for instruction." How he tackled the problem, and with what measure of success, is now common knowledge. Briefly, he began by fitting telescope sights, and substituting a service rifle for the one-inch tube which had hitherto done duty for sub-caliber firing. Thanks to these devices, the *Scylla's* practice became much more accurate, but the difficulty of training men to keep their sights on the target when the ship was rolling still remained. It was overcome by Scott's invention of the "dotter," an instrument that reproduced the movements of the target in a seaway. After a short course of instruction with the "dotter," the gunners of the *Scylla* went out for their next firing test, and amazed all beholders by the certainty with which they hit the target in spite of the rolling of the ship. At the prize firing in May, 1899, the *Scylla's* six 4.7-inch guns fired seventy rounds and made fifty-six hits, a score of eighty per cent. This performance had never been approached before. Captain Scott's next ship was the *Terrible*, and it was in that vessel that he introduced the "deflection teacher," a contrivance that taught the gunlayer to readjust his sights in

accordance with the last shot. Another invention of his was a machine for practicing rapidity of loading. While in command of the *Terrible*, during the South African War, he designed the mounting which enabled heavy naval guns to be used in the field, and incidentally saved Ladysmith. As the *Terrible*, like the *Scylla*, made eighty per cent of hits at prize firing, the extraordinary value of Scott's system of training was no longer in doubt. In April, 1903, he was appointed Captain of H. M. S. *Excellent*, the gunnery school, and remained there two years, during which he incurred disfavor at the Admiralty by his frank criticism of the gun sights then in use. His next appointment was inspector of target practice, and in succeeding years the gunnery of the navy advanced by leaps and bounds. In 1907, the average of the whole fleet was 79.1 of hits out of of every 100 rounds fired—practically double the average of 1904. The perfection of the Scott director dates from this period, though it was not officially taken up until 1910, when an experimental installation was fitted in the battleship *Neptune*. In a competitive firing trial between the *Thunderer* and the *Orion* in 1912, the former having the director system and the latter being without it, the *Thunderer* made six times as many hits as the *Orion* at a range of 9,000 yards. Having regard to this striking result, it was unfortunate that so much time should have been lost in equipping the fleet with directors. On the outbreak of war only a few ships had been so fitted, but then the work was pushed on so rapidly that Jutland found nearly all the Grand Fleet capital ships with director control for their main armament. Admiral Scott had retired in 1913, and one of his first acts on regaining freedom of the pen was to write a letter to the *Times* which, in effect, condemned the battleship as an anachronism. This letter, which appeared exactly two months before the outbreak of war, naturally provoked a heated controversy. Naval opinion as a whole expressed emphatic dissent from his views, nor were they borne out by actual experience in the conflict that followed. That the battleship held its own against the underwater menace, and performed its traditional functions without serious interference from enemy submarines, is admitted by most unbiased judges, but Sir Percy Scott's faith in the submarine remained unshaken. Almost to the day of his death he was writing vigorous denunciations of the great ship and the folly of the Admiralty in building new *Dreadnaughts*, instead of converting the navy into a composite force of fast cruisers, submarines and aircraft.

His death has deprived the country of a loyal and singularly able servant, who did as much as any man to prepare the British Navy for its supreme ordeal. That his controversial methods were not always above criticism we should be the last to deny. Believing fervently in every cause he espoused, he was apt to be intolerant of opposition; nor would he condescend, as a rule, to argue a case on its merits. In his war against the battleship he weakened his cause by ignoring technical points which had a vital bearing on the issue. For example, he never admitted that the battleship of today is less vulnerable to underwater attack than her predecessor of ten years ago. Nor shall we be doing him an injustice if we suggest that the exercise of a little more tact and patience on his part might have smoothed his relations with authority and thus expedited many of the reforms which, he always contended, were held up by departmental obstinacy. It is, however, not as a disputant, but as a pioneer of scientific gunnery, a zealous sea officer, and an ardent patriot that Sir Percy Scott will be held in grateful remembrance by his country. Of him it can be said with perfect truth: "He taught the navy to shoot straight." We are very sure that he would have asked no better epitaph.

FRANCE

Qualities of the 2,400-ton French Destroyers

By J. B. Gautreau, *Naval and Military Record*, 8 October, 1924.—After a period of depression, an atmosphere of optimism prevails in naval circles. Minister Dumesnil, who displays commendable personal activity, reveals himself as a sincere advocate of naval expansion, while Premier Herriot does not show toward the fleet the same indifference as did Premier Poincaré. The aeronautical program, as well as the new cruiser and destroyer designs, are being prepared by the best brains in the Section Technique. Not a week passes without some new ship being floated. Within a few days the *Chacal, Leopard,* destroyers, and *Souffleur,* submarines have been launched.

The *Chacal* type of ocean-going destroyer has an imposing silhouette and very pleasing lines, with swan-like bows and overhanging sides for a quarter of the whole length. The freeboard forward is about 5.50 meters, while amidships it exceeds three meters, which, together with the shape adopted, is calculated to insure in all weathers good conditions of habitability and excellent fighting efficiency, the two (instead of three in the original plans) 5.1-inch placed in echelons forward being respectively seven and eight and one half meters above the waterline, and the triple torpedo tubes being at a height of over four meters. The elevations and command of the whole armament are slightly better than in British flotilla leaders and nearly equal to what has been realized, in that direction, on board the speedy British cruisers of the *C* class. The crew's quarters are exceptionally comfortable and roomy for vessels of that class, that would well deserve the name of *croiseurs légers* if their robustness, sea endurance, and radius of action were equal to their outward qualities.

They will be next year, and without contest, the most powerful torpedo craft in commission, fast enough at sea to easily escape from the reach of any cruiser, while carrying an armament superior in range to that of any destroyer. The new French 130-millimeter guns, that fire a high explosive shell of some sixty pounds, exceed for range, handiness and rate of fire the pre-war 6-inch and 5.5-inch weapons. The only regret expressed is about the suppression of one 5.1-inch gun. Originally the *Chacals* were to carry six 130-millimeter guns—three forward and two placed on twin-mounting on the second echelon. Experiments, however, showed the gain in rate of fire to be illusory, and, on the other hand, the stability of those vessels can but gain by a reduction in the top hamper, all the more so as their draught forward does not exceed three meters, against four meters aft.

Some divergence of views exists as to the ideal caliber and number of guns for destroyers. Quick-firing and accuracy in rather unsteady craft, intended to fight at high speed, are incompatible with heavy shells and complicated loading; and those officers who have had experience with the ex-Boche series that mounts four 6-inch weapons in a displacement of some 2,300 tons consider it would be a mistake to sacrifice practical rate of fire to a smashing or piercing power that there will be few opportunities to utilize to good advantage. Her superior speed is the best weapon of a destroyer as against a cruiser; but should the range be very short, as in the case of surprises (*Emden-Mousquet, Hoenigsberg-Pegasus,* etc.), then a 5.1-inch gun is better than a 6-inch weapon, or as good. It cannot be said that the 2,400-ton *Gallic* destroyers are overloaded with armaments for their size, when compared with the British *Keppels* and Italian *Leones,* that carry nearly as heavy a battery on much smaller displacement. The next six months will show whether the *Chacals* can compete for speed with the British *Shakespeares,* that are credited with 40 knots.

The distribution of the armament, on the axial line, that has *raisons*

d'être in a ship of the line or cruiser, is thought by many to be unsuitable for light craft intended for end-on running fights, either pursuing or being pursued. To deal the enemy the first blows—smashing, knock-out blows if possible—requires caliber, number, command, and practical installation of guns, and also the sheltering of gunners behind ample shields. No, while the advantages of axial disposition of guns in echelons are obvious, they offer drawbacks in light craft: viz., top hamper, exaggerated superstructures, more vulnerable target, reduced volume of fire end-on, that is in the very direction where a destroyer needs to be supreme. Therefore, a better solution to the armament problem would consist, for a 2,400-ton vessel, in the distribution of five guns of 5.5-inch (new model) or six 5.1-inch weapons in cross-way fashion, as in the British *Dreadnought*, with a view to having three guns firing, easily, comfortably, right ahead, with those on the sides slightly sponsoned outwards to procure a wider arc of fire. Such a craft, in pursuit, if armed with the 5.5-inch caliber, would smash a *Chacal* or any existing destroyer in no time. With a width available of twelve meters, it is possible to accommodate three guns in the manner described. Sir William White and Sir Philip Watts have given an interesting solution to that end-on fire problem in the *Amethyst, Boadicea, Birmingham,* and *Frobisher* types.

New Flotilla Leaders

Army, Navy and Air Force Gazette, 20 October, 1924.—An interesting and useful class of vessel is that of the French flotilla leaders now taking the water. When the *Panthère* is launched next Tuesday, there will be five afloat, leaving only the *Lynx* to complete the series. With a displacement of 2,362 tons, these vessels are the largest flotilla leaders listed in the Parliamentary Return of Fleets, with the solitary exception of the *Admiral Sénès,* formerly the German vessel *S-113,* and now in the French service. As compared with the four 5.9-inch guns with which those later German leaders were armed, the *Panthère* type will have six 5.1-inch guns, and the number of torpedo tubes is increased from four to six. The heaviest British leaders displace 1,800 tons, with five 4.7-inch guns and six tubes.

Inquiry on French Naval Engineering

Engineering, 10 October, 1924.—The plugs of three boiler tubes in the French battleship *Courbet* gave way recently; three men were killed and ten were injured. A court of inquiry censured the captain and two engineer officers, but found also that the accident was due to "certain deep laid causes which went beyond personal responsibilities." A committee of inquiry was therefore appointed after the court had given judgment, to decide whether any personal responsibility existed (1) with regard to boilers constructed before 1922; and (2) with regard to naval construction in general, "more particularly in respect to those sections of it which are concerned with testing and fitting." These very wide terms of reference imply that French naval construction in the past few years has caused uneasiness. In the meanwhile, the new minister of the marine, Monsieur Dumesnil, has set up a new permanent committee at the Rue Royale to "study the use of machinery and boilers in the new ships, and to decide all questions relative to the upkeep and management of such material." As it is hardly credible that no section of the French Admiralty has, hitherto, had these very duties to perform, the new committee probably takes away some duties from an over-worked department. The boilers of the *Courbet* were of the Niclausse type.

Unprecedented Naval Supremacy of Britain: Political and Naval Consequences of the Triumph of the Zeppelins

By J. B. Gautreau, *Naval and Military Record*, 29 October, 1924.—The massing of the British Navy in the Mediterranean is a naval event of greater importance, even for Paris naval observers, than the series of coastal exercises being carried out by the diminutive Dumesnil squadron on the coasts of Tunisia. Whereas in 1914 Britain only commanded the North Sea, France guarding the Mediterranean for the Entente, England is today supreme in all European waters. Speed and range, first assets of victory, are hers as well as aerial, submarine, and all technical superiority.

The successful flight from Friederichshafen to America of the latest German Zeppelin is, in many respects, an event of the greatest political and military importance. German popular opinion has seen in it a commencement of the ardently desired *revanche;* German genius and technical superiority commanding the world, *Deutschland über alles* dream, being anew realized; and jeers and threats have been directed against France, "the strongest fortresses of which at the German mercy" (remarks the Cologne *Gazette*), which is an unexpected answer to the pro-German policy of Premier Herriot, and serves as a timely warning that kindness toward the Boche will never pay and that no hope need be entertained of a friendly entente between Germany and France. Consequences of the disregarding of the Versailles Treaty, by Bocheland with the complicity of some of the Allies will, henceforth, be felt in quick succession. Super-Zeppelins to be built wholesale will replace Germany's lost navy, and with advantage contend German enthusiasts, since a helium-filled Zeppelin fleet, practically invulnerable, will be able not only to attack coasts, but also to strike at the very heart of both France and Britain, paralyzing the foe and preventing him getting ready for war. No doubt Zeppelins are to be exclusively commercial—written, sworn, and vouched for—but a few hours will suffice to substitute armaments and bombs for passengers.

The great Zeppelin flew over France from Bâle-Belfort to Bordeaux in cloudy weather, and passed unseen (generally) at a great height. In war it could have bombarded with impunity cities offering large targets, such as Bordeaux and Nantes, where aerial attacks are least expected, causing few casualties, perhaps, but something like panic and a general feeling of insecurity. The *Dixmude* dirigible had a radius of action of 10,000 miles and could have carried some thirty tons of bombs. The projected Zeppelins for Transatlantic dirigible service will be twice as powerful (Hugo Eckener and Lempert plans); 200,000 cubic meters, 300 meters long, with fifteen 150. h. p. motors, and room for 100 passengers besides four days' fuel and provisions—that could be replaced by explosives. Intense furore seized German dirigible specialists at the news, in November, 1918, of the sudden collapse of the Kaiser's army, for they were convinced of the ability of the 250-meter long dirigibles then in hand to change the scales in favor of the Fatherland, and it must be said wholesale bombardment of a large city such as Paris, London, Lyons, Manchester, or Liverpool by a fleet of giant Zeppelins, pouring a hundred tons at a time of incendiary liquids and asphyxiating gases, would be a blow to the fortitude of the bravest nation. In this line prevention is better than cure; to strike first at dirigible factories and hangars forms the only efficient tactics in aerial warfare; for, once the dirigible enemy is in the air, screened at will by artificial clouds, it is practically invulnerable to *avions de chasse,* especially when dull weather is chosen for operations.

France is in a position of inferiority for aerial warfare, at least so far as strategy is concerned. German aerial lines to Spain or to America all pass over France (as do also English lines to Malta-Egypt-India), with the result that German pilots will acquire intimate knowledge of the aerial

geography of France and be enabled to strike when wanted and, Bocheway, without warning at the most vulnerable points of the national defense, thus cutting the very arteries of the French resistance. This is a serious question, indeed, considering the incredible hatred being fostered in Germany against France and the practical impossibility for a German possessing an asset over an enemy without utilizing it to the full. This deadly aerial danger for France is increased a hundredfold as the result of the thoughtless centralizing mania that has assembled aeronautical factories in the immediate vicinity of Paris. Far more than two birds could be killed with one stone. Dispersal of the targets is the one standing lesson of the bombardments of the last war; it is rendered necessary by the ever-increasing caliber and destructiveness of modern projectiles.

Minister Dumesnil, obeying mostly electoral considerations, has decided that the many naval arsenals are to be improved, instead of being suppressed, as was wanted by partisans of economy and efficiency. Even the Rochefort arsenal, that has just over 1,000 workmen, is receiving repairing orders. Objections to such a course are many. Arsenal work is abnormally unduly costly and slow. State arsenals too often are hotbeds of Communism and anti-patriotism, and experience has shown the discipline on board warships has never benefited by prolonged stays in *porte-militaires*. The sole argument for the retention of six *arsenaux militaires* is the importance of offering many *points d'appui* to submarines and commerce-destroyers, as well as dispersed targets to the blows of aerial enemies. Rochefort, for instance, may have an important offensive rôle to fulfil under the new conditions of warfare.

French naval men and journals are paying a well-deserved tribute of admiration and gratitude to the memory of Admiral Sir Percy Scott, a great Englishman, who personified the best qualities of his manly race and a great seaman whom his inventive genius of world-wide fame and influence made effectively an admiral of every fleet. *De facto*, he was *Admiral honoraire de la Marine Française*. All gunners, Boche included, recognized him as their master. Only strong races, only navies overflowing with vitality, can produce strong characters, true grand chiefs of the Percy Scott, Fisher, and Beresford type, who, just like Nelson at Cape St. Vincent and at Copenhagen, unfettered by red-tape and conventional discipline, dare think and boldly act on their own initiative and responsibility when prompted by an irresistible sentiment of the superior interests of their country.

French Naval Construction

The Engineer, 17 October, 1924.—While the state of the French national finances has necessitated the carrying out of a severe policy of retrenchment in order to reduce the threatened heavy deficit of the forthcoming Budget estimates, the Minister of Marine is of the opinion that such economies should not affect his department. M. Dumesnil will shortly present a plan to the Budget Commission for the consolidation of the navy in the sense that the existing program of naval construction will be completed by the addition of such vessels as are now lacking, by which is probably meant the construction of battleships. All the old vessels are to be scrapped and replaced by new units. M. Dumesnil will ask the Budget Commission to provide yearly grants over a long period for the building of a homogeneous navy which will be sufficiently strong for all purposes of defense. At the same time, he refuses to transfer to private shipyards the work which, he argues, should be confined as much as possible to the arsenals, and for that reason he proposes to reorganize the arsenals and run them along purely industrial lines. This revived activity in the reconstitution of the navy coincides with the interest which has been shown in France in the con-

centration of the British Fleet in the Mediterranean. The strategical necessity of such a concentration is recognized, but the French argue that they should be in a position to hold their own in any emergency.

France's Large Submarines for Convoy Duty

Engineering, 24 October, 1924.—Submarines bigger than the British *L* class and smaller than the *K* class but more powerful than either in torpedo armament, have recently been launched in France. It would seem as though this class of submarine were intended for coastal defense and commerce protection. A great many naval officers now believe that overseas convoys of merchant ships can be protected, and brought into port, in the teeth of opposition from surface cruisers, if they are defended by an escort of submarines with a powerful torpedo armament. The problem is at present in its infancy: and it would seem as though this French type were designed as the first step towards its solution. If any submarine with the same tonnage as the *Souffleur* were intended for commerce destruction, she would undoubtedly be given a far more powerful gun armament. The submarine *Souffleur*, launched at Cherbourg, is of the *Requin* type, which comprises six boats in all. Her characteristics are: Displacement, 1,082 tons on surface, 1,388 tons submerged; i.h.p., 2,900 on the surface, 1,800 submerged; speed, 16 knots on the surface, 10 knots submerged; endurance, 7,000 miles at 9 knots; length, 257 feet; beam, 22 feet; draught, 15 feet; armament, one 3-inch, nine anti-aircraft guns, with ten 21.7-inch torpedo tubes.

GERMANY

Germans Take a Hand

Naval and Military Record, 8 October, 1924.—One significant item of intelligence in connection with this new Soviet naval program is the statement that German engineers will be principally employed in connection with the designing and construction of the projected craft. It is admittedly to the activity and resource of Germans that Russia is indebted for the fact that she was recently able to send forth quite a respectable fleet to carry out maneuvers in the Baltic. Ships which had been rusting to ruin during the first three years of the Bolshevist régime were taken in hand and at any rate restored to a condition in which they are able to steam. There is, of course, no necessity for any dramatic conclusions in this Teutonic activity. On the other hand, it is certainly not to be ignored.

That the new Soviet program is due to German inspiration is probable enough. The fact that Bolshevism and Prussianism are at the opposite ends of the pole (so we are assured, but are they?) is quite immaterial. Germany cannot begin to reconstruct her navy in Germany for many years to come, but there is no possibility of preventing Germany from constructing a navy in Russian yards, if Russia is willing. That she is not unwilling we now have some degree of evidence. Of course, the ships are to be Russian ships, but they are to be of German design. The Soviet Government has suddenly displayed a new-born interest in sea power. It may, indeed, be that the naval aspirations of Poland are definitely responsible for this. The fact that Germans are taking a hand in the materializing of this new-born interest at least gives grounds of legitimate suspicion that they have fostered opportunity to the utmost.

JAPAN

Naval Notes

The Current History Magazine, November, 1924.—Japanese naval officials have expressed the greatest surprise at the tenor of Secretary Wilbur's remarks, which resulted in his recall to Washington, especially that a public

official of his rank should give voice to such sentiments concerning a friendly nation in time of peace.

The Navy Department has considered the British protest on the subject of gun elevation and has formulated a reply which is being formally drafted by the Foreign Office for transmission to England. In substance, the position of the Japanese naval authorities is essentially that taken by the United States Navy—that increased elevation was not discussed at the Washington Conference and that Part 3 of the Naval Treaty specifically permits such an alteration by its language. In connection with the Japanese reply to the British protest it is well to note the still undenied report that the guns of the battle cruiser *Haruna* have been or are in the process of being elevated. The elevation of the guns of the four battle cruisers of the *Haruna* class is of great importance to Japan, as, in consideration of the vessels' speed, it nearly doubles their value. It would seem that, though the British Government does not regard increased gun elevation as permitted under the treaty, the United States, Japan, France and Italy regard it as legal. In such matters the opinion of the greatest number of powers supposedly controls.

The assignment of two destroyers to replace the ice-breaker *Odomari* in the northern fishing waters reveals a tense situation between Japan and Russia on the subject of fisheries. The Ninth Detroyer Division, consisting of the *Maki Kuwa, Tsubaki* and *Keyaki*, is assigned to the waters around Northern Karafuto, and the Eighteenth Destroyer Division, consisting of the *Tokitsukaze, Amatsukaze* and *Isokaze*, will patrol the coasts of Kamchatka and the Kurile Islands.

The old battleship *Asahi*, which is retained by Japan under the Naval Treaty for training purposes, hit a reef near Hikose on May 28. The vessel sustained considerable damage, but with the aid of the destroyer *Shiokaze* was towed into Yokosuka.

The present Japanese naval aviation program has as its object the establishment of seventeen corps of planes. The main flying fields will be at Kasumagaura, Yokosuka, Sasebo and Ormura. It was intended that two and one-half corps should be added during the fiscal year of 1924, but owing to the decrease in the appropriation only one corps will be added, and it will be stationed at the new aviation base at Chinkai, Korea.

The announcement of the naval appropriation for the year 1924-25 shows 126,322,825 yen (about $63,161,412) for ordinary expenditures, such as pay and fleet maintenance, and 112,268,793 yen (about $56,134,396) for extraordinary expenditures, such as the expansion of bases and new construction.

Since the beginning of the year a large number of new and important ships have been received from the builders and put into active service. They are the cruisers *Abukuma, Sendai* and *Jintsuu*, the large destroyers *7, 9, 11, 15* and *17;* the 850-ton destroyers *8, 16,* and *18;* the submarines *44, 58, 69, 71, 73* and *74*, together with a number of auxiliaries and special service ships.

UNITED STATES

American Naval Strength

By Sidney G. Koon, M.M.E., *The New York Times*, 7 December, 1924.—*To the Editor of the New York Times:* In connection with the large amount of publicity which is being given to the question of the relative efficiency of the British and the American fleets of dreadnaughts retained under the provisions of the Washington Treaty I should like to append a few thoughts. In this connection I might say that from my having been at the head of the statistical division of the Navy Department (Bureau of Construction and Repair) during the World War, my opportunities for obtaining information which has the merit of being both complete and accurate have been very good.

It is difficult to escape the conclusion that the United States made unduly heavy concessions in the Washington Conference for Limitation of Armament. No doubt that was the price which the American Administration was willing to pay to obtain the cessation of dreadnaught building which followed, but to any student of naval affairs who examines the situation dispassionately a few striking facts emerge. As the "sacrifices" of ships were made solely by Great Britain, the United States and Japan, this discussion will be confined to those three powers; France and Italy, the other parties to the five-power naval treaty, did not discard any capital ships because of it.

Neither Great Britain nor Japan retains any capital ship which was launched earlier than 1912. Four of the American ships retained were launched in 1909, 1910 and 1911. Those four ships carry 12-inch guns. Neither Great Britain nor Japan retains any ships which are not super-dreadnaughts; that is, they all carry guns 13½-inch bore or heavier. Not one American ship retained has a (designed) speed of over 21 knots. Every one of England's twenty ships retained had a designed speed of 21½ knots or more; eleven of them were designed for 25 knots or higher. A similar condition obtains with the ten Japanese ships retained; all were designed for a speed of 22½ knots or better, and four of them can steam at more than 27 knots.

Now all of these items are significant. The basis of "scrapping" was displacement alone, but four of our ships (95,650 tons, or eighteen per cent of our displacement) fail to qualify as super-dreadnaughts, while all of their rivals in both fleets do so qualify. Not one of our ships is a battle cruiser (the two ships of that type being converted into airplane carriers do not here count), while Japan has four battle cruisers and England has six. We could neither force an engagement nor avoid one, and we would be constrained to fight on whatever terms our opponent might elect to dictate. As to gun range—omitting the 12-inch weapons on our four earliest ships, which are definitely outclassed—again the advantage is all with the two island empires.

For a power which was supposed to retain a force equal to that of Great Britain and five-thirds that of Japan, these items of unbalance are most serious. But that is not all. Definite ships were selected which would leave the three powers as nearly as possible 525,000 tons, 525,000 tons and 316,000 tons, with Japan last. These figures worked out very well for the United States and Japan, for the eighteen American ships retained displace 525,850 tons and the ten Japanese ships displace 313,300 tons. England, however, still holds 578,725 tons, including the two new ships she is building. Here is a ten per cent disparity which was not "nominated in the bond."

Because all of England's retained ships are super-dreadnaughts, her broadside fire is greater than ours by eleven and one-half per cent, matching well the British superiority in displacement. England has 292,300 pounds of broadside in her retained ships, against 262,280 pounds in ours, for our four old ships with 12-inch guns—ships which recently have been reported officially as utterly inefficient and unable to operate with the fleet—are relatively weak in this respect. They have broadsides of 8,700 pounds and 10,440 pounds in the two types, while the *Tiger* is the only ship in either the British or the Japanese array with less than 11,000 pounds, and none except battle cruisers have under 12,500 pounds.

While it is far too late to "do anything about it," it is nevertheless pertinent to speculate as to how this disparity might have been reduced. Suppose we had arranged to discard all eight of our 12-inch gun ships instead of only four of them. Then this additional 95,650 tons of discard could have been made up by permitting the completion of the *Washington* (lately made a target for shells and bombs), and two of the battle cruisers—a total of 119,600 tons for the three ships. True, this would have increased our

retained displacement by 23,950 tons, making it 549,800 tons. But with England retaining 578,725 tons we still would have lacked something for equality, and this would have helped our broadside fire also, bringing it up to 274,400 pounds, or within about six per cent of England's 292,300 pounds.

Let us see how such a change in the regiment would have affected our position relative to that of our rivals. Our earliest retained ship would have been one which was launched in 1912—exactly as with Great Britain and Japan. All of our retained ships would have been of the super-dreadnaught type—exactly as with Great Britain and Japan. Some of our retained ships would have been of high speed—exactly as with Great Britain and Japan. We would have battle cruisers capable of keeping in touch with the enemy's fleet and of forcing (in certain measure and under certain limitations) our own ideas as to time and character of action—exactly as with Great Britain and Japan.

These elements of equality of opportunity—peculiarly an American institution, when applied to the body politic—would have gone a long way toward keeping the United States Navy in a condition of efficiency. No "lame" ships would have hampered fleet movements. With two sizes of heavy guns only—14-inch and 16-inch—battle ranges would have found a measurably uniform character of attack. All the projectiles would have been capable of puncturing existing armor belts at normal ranges, which the 12-inch shell, with its higher weight and poorer carrying power, cannot do. And the ships could have operated together, on similar work, without having to make allowances for certain units incapable of doing the work. All of these reasons would have justified American naval men in demanding the full measure of equality to which their nation was, and is, entitled.

Fleet Maneuvers

Army and Navy Journal, 25 October, 1914.—The program for the fleet at the next maneuvers is an extended one. It will really begin on February 13, when the scouting fleet sails from the Canal Zone up the Pacific Coast. The force from the East Coast is due at San Pedro February 23. Between that date and the date that they leave the Canal Zone a problem will be worked out in which the battle fleet will be a defending force against an attack by the scouting fleet. After the mobilization of the entire United States Fleet at San Pedro it will sail for Hawaiian waters, and the scouting fleet will remain with the battle fleet from April 27 to June 7. East Coast ships will return to their home yards in time for the relief of the officers who are due to come ashore in June, as they will all be in their yards by July 18. They will leave the Canal Zone by June 28.

But the trip of the battle fleet to Australia complicates the situation. Under the tentative program the battle fleet will not be back to San Francisco until September. The relief of the flag officers and many battleship commanders while they are in Hawaiian waters will occasion a large expense in transportation to which it is feared that the Director of the Budget will object.

There is another matter which is being considered in the Navy Department. The relief of practically all of the fleet commanders, including the commander in chief, in the same month, or within five or six weeks, it is claimed, does not add to the efficiency of the Navy afloat. It has been suggested that a schedule be arranged by which roughly speaking, twenty-five per cent of the commanders of the fleet be relieved every three months. Such a program, it is admitted, would upset the arrangement of the private affairs of almost every officer in the Navy. The two years' service afloat has been in effect so long that naval officers plan their affairs ahead to fit

in with this program. All of the officers who are due for shore duty in June have made arrangements of some sort to come home at the end of this period.

In answer to this argument it is being urged that the demands for economy will make it almost impossible to carry out the two-year program if the fleet goes to Australia. Under these conditions it is insisted that the time has arrived when the periods of duty afloat can be so arranged as to prevent a wholesale change in the fleet commanders at any one time.

The subject is continuously being discussed in the Navy Department and it is believed that a new general policy will eventually be developed. In urging some change in the policy relieving commanders of the fleet, attention is called to the large number that are due for relief in June. Admiral Koontz, commander-in-chief of the United States Fleet, is due, under the two-year policy to pull down his flag on August 23.

Among the flag officers who, under the two-year policy, should be relieved in June, are Admiral S. S. Robison. Vice Admiral Phillip Andrews, Vice Admiral N. A. McCully (scouting fleet), Vice Admiral H. A. Wiley, Rear Admiral M. L. Bristol (overdue), Rear Admiral W. V. Pratt, Rear Admiral L. M. Nulton, Rear Admiral W. E. Cole (overdue), Rear Admiral W. C. Cole (overdue), Rear Admiral M. M. Taylor, Rear Admiral J. H. Dayton, Rear Admiral L. A. Bostwick (overdue), Captain G. W. Laws (overdue), Captain F. H. Clark, Captain W. S. Crosley, Captain W. P. Scott, Captain R. H. Johnston (overdue), Captain G. S. Lincoln (overdue), Captain John Halligan, Jr., Captain J. W. Greenslade, Captain H. L. Brinser (overdue), Captain Z. H. Madison, Captain W. B. Wells, Captain W. N. Jeffers, Captain A. G. Howe, Captains R. D. White, W. K. Riddle, J. G. Church and R. T. Menner (overdue).

Two other important assignments that will be vacant in a month or so are the governorships of Guam and Samoa. Captain H. P. Price's term at Guam and Captain E. S. Kellogg's at Samoa come to a close in about two months.

Secretary Wilbur Favors Strong Navy Policy

Army and Navy Journal, 1 November, 1924.—Secretary of the Navy Curtis D. Wilbur delivered a radio talk from station WCAP, Washington, D. C., on Navy Day, Octover 27, in which he advocated the maintenance of the Navy at treaty strength, suggested increased personnel for the first line of defense and favored appropriations for gun elevation. His speech was regarded as having great significance, according to report, as it is believed to outline the attitude of the Administration toward the Navy.

He said in part:

"This is the birthday of Theodore Roosevelt. This day has been selected by the Navy League of the United States as Navy Day. The purpose of Navy Day is to inform the nation concerning the American Navy, its personnel, its aims and purposes, in order that the nation may not suffer from ignorance or neglect of this means of national defense.

"The first question to be answered is this: Why do we need a Navy at all? The answer is to be found in the fact that we are bounded on the east and on the west by great oceans; on the north and on the south by friendly and less populous nations.

"*An adequate Navy would give us an opportunity to enlist, train and equip an army to repel invasion, for we are opposed to a great standing army or to compulsory military service. One hundred thirty thousand trained men in a modern Navy could hold the first line defense while an army was being formed.*

"The possibilities of naval architecture are limited by the fact that the weight of a ship must always be equal to the weight of the water displaced

by the under-water body of the ship. When it is greater, the ship will not float. Guns, armor and engines are all heavy, and as we increase the weight of one we must correspondingly decrease the weight of another.

"The armor used in 1862 could not be penetrated by the gunfire then used, but the guns were improved until the projectile could penetrate such armor; then the armor was thickened. Thus the race between gun and armor was begun. That race is now ended definitely in favor of the gun. Battleships cannot carry armor sufficiently thick and strong to resist the modern high-power, large caliber gunfire at ranges of less than 14,000 yards. As a consequence, the commanders of modern battleships will endeavor to gain the additional protection of 14,000 yards of air by fighting at ranges of 14,000 yards or over. Air resistance decreases the speed of projectiles and their power of penetration so that at ranges of 14,000 yards and over the armor used on modern battleships may prevent penetration.

"This, and the fact that battleships cannot be safely brought within torpedo range of the enemies' destroyers or battleships, means that modern battles will be fought at ranges in excess of 14,000 yards where this is possible.

"The significance of this statement is apparent when it is known that up to the beginning of the World War no target practice at ranges as great as 14,000 yards had ever been held by our Navy.

"The greatest difficulty in directing the fire of a battleship arises because the ship is constantly rolling and pitching, thus requiring either that the guns be moved constantly to compensate for the motion of the ship, or that the guns be fired at one instant in the ship's roll when the guns bear upon the target. For this reason it was not possible to hit a target at long ranges. Our target practice up to 1902 was conducted at a range of only one mile.

"But new methods of controlling gunfire with delicate instruments of precision, and the use of electricity to operate turrets and to indicate gun range and direction of the target, has made successful fire at long ranges possible. By reason of perfection in the methods of controlling the gunfire, experimental target practice has been had recently up to ranges of fifteen sea miles.

"As modern battles will be fought at long ranges, the power of our Navy must now be measured, not by the energy of the guns at the muzzle, but by the blow they can deliver at long ranges. This power has constantly increased. Our Navy in 1862 was the greatest in the world, the range of the guns was but little over one mile, but our Navy of today can deliver a blow sixteen miles from the ship, six times as great as that which the Navy of 1865 could deliver at one mile. Some of our guns can not shoot this far, not because they are not powerful enough, but because the gun mechanism does not permit them to be elevated sufficiently to do so.

"Subject to the construction of the treaty for limitation of armament, we are asking Congress to authorize the necessary changes to permit this gun elevation, so that our fleet may have a maximum efficiency at long ranges. This will make our fleet homogeneous, and be of great assistance in fleet action.

"We have a great Naval Academy where boys from every state in the Union and from every status in life are trained for the duties of naval officers. The school is thoroughly democratic—every man receiving pay while under tuition. The appointments are almost all made on a competitive basis without regard to political or other considerations. In this great university Americanism is ever foremost in thought and in deed. It is a great national asset.

"Can we outlaw war?" Yes, just as we have outlawed yellow fever, smallpox, typhoid fever, diphtheria and the bubonic plague; not wholly and com-

pletely, but sufficiently so that no great world catastrophe seems likely, and so that small outbreaks may soon be checked.

"It cannot be accomplished by resolutions against it, any more than we can prevent tuberculosis by resolution. It requires work, unceasing effort and intelligent preparation for and against war. The great hope against war is that the peacefully disposed nations shall be strong. Where right and might are on the same side, right will certainly triumph. 'Might will not attack right, if right has might.'"

Secretary for Treaty Navy

Army and Navy Journal, 1 November, 1924.—Of special significance was the speech of the Secretary of the Navy which was broadcast on October 27 as the chief address of Navy Day. The Secretary assumed a more aggressive attitude in his demand for a treaty navy in this address than in any of his public utterances since he has taken charge of the Navy Department.

The speech is generally regarded at Washington as a forecast of the attitude that the Navy Department will assume in asking for legislation at the approaching session of Congress. It has done much to dispel the feeling of uncertainty that existed in National Defense circles as to the attitude of the Administration toward the Navy.

The daily press seized upon a discussion of the Air Service problem by President Coolidge and construed it as meaning that the Administration had changed its policy and would not insist upon legislation for the modernization of the fleet and for the authorization of the Navy Department's cruiser and submarine program.

Under these conditions the utterances of the Secretary of the Navy on Navy Day renewed the courage of National Defense advocates and, no doubt, will result in an aggressive action at the approaching session.

In referring to the proposition for the elevation of the guns of the older battleships, the Secretary said:

"As modern battles will be fought at long ranges, the power of our Navy must not be measured by the energy of the guns at the muzzle, but by the blow they can deliver at long ranges. This power has constantly increased. Our Navy in 1865 was the greatest in the world—the range of the guns was little over a mile—but our Navy of today can deliver a blow sixteen miles from the ship six times as great as that which the Navy of 1865 could deliver at one mile.

"Some of our guns can not shoot this far, not because they are not powerful enough (but because the gun mechanism does not permit them to be elevated sufficiently to do so. Subject to the construction of the treaty for the limitation of armament, we are asking Congress to permit this gun elevation so that our fleet may have a maximum efficiency at long range. This will make the fleet homogeneous and be of great assistance in fleet action."

This is an advance over the policy of the Navy Department at last session. Last session, Representative Britten of Illinois proposed an amendment to the cruiser bill providing for the elevation of the guns. He did not have the support of the Administration at the time, and the amendment failed. Further than this, the authorization of the appropriation of $11,000,000 for the elevation of the guns was repealed upon the motion of Chairman Madden of the House Committee on Appropriations without a protest from the Administration. It is not believed that Secretary Wilbur would have made this declaration in his speech without the approval of the President.

The Secretary of the Navy appears to have won in a quiet contest which has been going on with the State Department. There is an impression that Secretary of State Hughes was really opposed to the elevation of the guns, although he has never committed himself in public on the subject.

Incidentally, the Secretary of the Navy insisted that Senator King and Senator Pittman, both Democrats, were responsible for the defeat of the cruiser bill. This puts the administration on record in an indirect, but none the less positive manner, in favor of the early passage of the bill that will inaugurate the modernization of the fleet.

To carry out this policy announced in his speech, the cruiser bill should be amended, to include an authorization for the elevation of the guns. It is confidently believed that the Secretary, with the approval of the President, will make this recommendation upon the convening of Congress.

On this subject the Secretary said:

"England has completed more aircraft carriers than we have. We have not fallen behind in the treaty ratio in aircraft carriers, but we have not yet built up to it. England has more scout cruisers than we have—she had more when the treaty was entered into and has built more since. We are building more, but we have not built up to her. We have asked Congress to appropriate more money for our aircraft carriers, in order to complete them, and to authorize needed repairs to our battleships; to modernize these ships in accordance with the treaty and to authorize an increase in the number of submarines and scout cruisers.

"The Budget Bureau and the President authorized most of our requests. The House of Representatives passed the necessary bills. They also passed the Senate, but Senator King of Utah, a Democrat, moved to reconsider the bills, and when they came up for consideration Senator Pittman of Nevada, a Democrat, began a filibuster which he continued until Congress adjourned, and thus, although the President was in the Capital ready to sign the bills, we were left until next session, starting this December, for the needed legislation to put our battleships in condition.

"I do not charge the Democratic party with defeating this legislation, because both Republicans and Democratics practically unanimously voted for the needed legislation. I do say, however, that it does not lie in the mouth of the nominee of the Democratic party for the presidency to charge the Administration with dereliction concerning the Navy when the needed legislation proposed by the Administration was defeated by two Democratic senators."

In the course of his speech the Secretary also declared that the American Navy was only eighty per cent of the strength of the British sea force. He also indicated that the Navy is below its strength in officers and men. A significant paragraph in his speech on this subject is as follows:

"An adequate Navy will give us an opportunity to enlist, train and equip an army to repel an invasion, for we are opposed to a great standing army or to compulsory military service. One hundred thirty thousand trained men in a modern Navy would hold the first line of defense, while an Army is being formed."

The strength of the Navy at present is 86,000, and evidently the Secretary thinks that this is one of the deficiencies of our sea force. While contending that the United States is striving for peace, the Secretary throughout his speech pleaded for the maintenance of a treaty Navy.

Limit of Cost on Naval Ships

Army and Navy Register, 25 October, 1924.—It is expected that among the recommendations which will be made by the Navy Department to Congress when it reconvenes in December will be one requesting authority for an increase in the limit in cost on the *Lexington* and *Saratoga,* for the conversion of which from battle cruisers to airplane carriers provision was made some time ago. At that time it was estimated that the limit of cost imposed on those vessesl as battle cruisers—$23,000,000 in each instance—would be sufficient to make the necessary alterations that would convert

them into airplane carriers. As matters have developed, with such influences on the work as are derived from the advance in the cost of labor and material in conjunction with the necessary changes in design, it has been found that it will be necessary to request an increase in the limit of cost by a considerable sum over the $23,000,000 for each ship. The explanation that must be furnished the naval committee, from which will come the recommendations for the additional authority, may produce more or less embarrassment for the naval officials, mainly in view of the assurance that, it is now recalled, was given by the Navy Department representatives at the time Congress authorized abandonment of the plans for building two battle cruisers and constructing, instead, two airplane carriers, the necessity and practical value of which strongly impressed those at the Capitol who were responsible for the legislation. It is safe to predict that the incident will invoke animated discussion, not only among members of the House and Senate naval committees, but when the proposition is presented to each branch of Congress.

In the meantime, one of the first things which Congress at the coming session will be invited to authorize is the increase in the limit of cost on the *Cincinnati, Milwaukee, Omaha,* and the submarine tender *Holland,* for which provision was made in the third deficiency appropriation bill that failed to be enacted in the last hours of the late session. There is no opposition to this authority, so far as is known, and none is anticipated when the bill is again taken up. It did not pass before adjournment in June because of the situation that left much pending legislative business and transferred it without prejudice to the coming session.

The Naval Budget

Army and Navy Register, 25 October, 1924.—No announcement has been made of the result of the conferences which have been held between the representatives of the Navy Department and the director of the budget as to the adjustment of differences of opinion in the preparation of the final recommendations to be submitted to Congress at the coming session for incorporation in the naval appropriation bill for the support of the naval establishment during the next fiscal year. It is expected that whatever may be determined upon, with the approval of the President, there will be a supplemental estimate representing the additional allotment which may be made in the discretion of Congress, but which does not have the characteristics of an imperative provision. There is no likelihood that the urgent need of major alterations will be adequately met, if met in any degree. Such work will have to be indefinitely postponed until the estimated revenues of the government permit more generous allotment to the various branches of the government. In the meantime, there will inevitably be certain handicaps imposed on the development of the Navy afloat, without necessarily impairing permanently its efficiency. While no alterations can be made in the direction contemplated and represented to the Navy Department as really necessary to check serious deterioration, the redistribution of existing funds has been so carefully made and will be so strictly controlled that there will be money available for repair and maintenance; and by this means it will be possible to carry out, it is believed, most of the departmental plans for fleet operation, including the joint maneuvers of next year in the Pacific. But there is, of course, no diminution of the serious situation which prevents such development in ship and fleet upkeep as comes from the restrictions upon expenditure of funds and the failure to appropriate in the measure required for the purpose.

While nothing has been anticipated by way of material relief so long as the President adheres to the policy of curtailment along the definite lines and in the direct fashion he has plainly indicated, there is some chance of a

decided improvement in the situation, when it comes to the availability of funds in a more general way than has prevailed. The limitation upon appropriations for the naval establishment is recognized as prudent and sagacious on the theory that the expenditures in that and in any other direction must be regulated by the amount of money which the government has to expend. Ignoring the frequently expressed situation that reduction of appropriations does not invariably mean legitimate and profitable economy and cannot be made so by mere declaration to that effect, it remains a fact quite generally admitted by conservative observers that it is a sound principle and good business also to specify the aggregate sum which can be assigned to the Navy for its support for the coming fiscal year. The trouble comes when too much limitation is imposed by Congress upon the more specific allotment and in detail of that total fund. It is urged that it would be of decided advantage to make the naval appropriation bill more elastic in its terms and authorize the Secretary of the Navy, for example, when funds are designated for a particular object and are found to be in excess of the needs of that purpose, to use the surplus in other directions. The naval appropriation bill for the current fiscal year indicated a helpful method of this character when it provided as follows:

Any money that may not be required under any of the foregoing appropriations for the objects for which provided as the result of decommissioning, or placing in reduced commission, or in reserve, any capital ship or other types of vessels may be applied, in the discretion of the Secretary of the Navy, to the repair, exclusive of changes and alterations, of vessels or to supplement the appropriation "Maintenance, Bureau of Yards and Docks." Prior to the obligation of such sum as may be diverted in pursuance of this authority the Secretary of the Navy shall certify to the Secretary of the Treasury the sum or sums to be diverted and the appropriation to be debited and credited.

This provision could easily be expanded without exceeding the aggregate of the appropriations allotted to the Navy and perform a great service through transfer of appropriations from one to another object or from one bureau to another of the Navy Department. A simple clause conveying such authority in more general and elastic terms than those embodied in the passage quoted from the current appropriation act would accomplish the purpose and with advantage to the Navy in several of its branches and in many of its activities, upon which Congress by too great restriction on expenditure has placed a disabling inhibition.

Experiments Will Aid in Determining Damage Sustained by Modern Warship from Long-Range Fire, Torpedoes and Aerial Bombs

By Captain Dudley W. Knox, Baltimore *Sun*, 17 November, 1924.—Washington, November 16.—Whatever may be said as to the legal and technical aspects of the efforts of William B. Shearer to prevent the sinking of the United States ship *Washington* by experimental firing, it must be conceded that such earnest and active interest as he, a private citizen, has displayed in the naval welfare of the country is most refreshing and a commendable example to the public. However, the time to raise effective objection to the scrapping of our partially completed battleship has gone by. We are now a signatory party to a treaty which requires scrapping. The time to object was before we signed up.

Mr. Shearer intimates that other nations have failed to adhere strictly to the treaty and that this fact should persuade us to keep the *Washington* afloat. It seems a better alternative that we should scrupulously comply with the treaty ourselves and endeavor to rectify any omissions on the part

of others by appropriate diplomatic action. On this basis the *Washington* must be scrapped by February 17 next, and the most desirable method of scrapping her is by experiments which will give us valuable information which cannot be gained in any other way.

The treaty lists by name the capital ships which may be retained by the several powers. The *Washington* does not appear on that list. It is further provided that "all other capital ships built or building of the United States, the British Empire and Japan shall be disposed of as prescribed" in great detail elsewhere in the treaty.

There are no other exceptions to the scrapping program of the treaty which would permit us to retain the *Washington* and we must either break her up, as is being done with our other ships that cannot be kept on our list, or sink her permanently. At the time of signing the treaty the *Washington* was so far advanced in construction that the operation of breaking her up would have been very expensive. It is cheaper to sink her, and that method being decided upon there is every reason to take advantage of the opportunity of experimental firing with guns, mines, torpedoes, and bombs against a capital ship target of modern construction. Much can be learned, much future efficiency of design gained and much money saved by such experiments. Great Britain has the advantage of the experience at the battle of Jutland to guide her design of future battleships. Japan has already taken advantage of the opportunity presented by having to scrap modern capital ships by conducting extensive experiments at sea with a ship similar to the *Washington*. So far we have lagged behind in such experiments and we are handicapped by less knowledge than is already possessed by the designers of other navies.

The experiments against the *Washington* will give valuable information in regard to the damage sustained by a modern ship from modern long-range gunfire, thus indicating probably desirable changes in the thickness and distribution of armor. For example, in the old days at short range most of the armor was placed vertically. Nowadays when many hits are to be expected at long range, the plunging effect of shells has to be considered also, and some of the total weight permissible to be put into armor, should be distributed horizontally. How much horizontal armor to use is best determined by experiment.

Another important question relates to the efficiency of the peculiar system of interior subdivision developed by American designers as a protection against fatal damage by mine and torpedo. The British solution, developed during the war, is an external bulge or so-called blister. The American practice is to construct a series of internal longitudinal bulkheads, with special bracing and subdivision into small compartments. This design never has been adequately tested against torpedoes, mines, or aerial bombs. Here is the opportunity.

Determination of the effect of aerial bombs upon battleships is especially important at this time. The general board of the navy, at the instance of President Coolidge, is considering the whole question of air power in relation to sea power. The Navy is allocating upward of $40,000,000 a year to naval aviation out of a total budget of nearly $300,000,000. Whether the Navy should spend less money on battleships and more on aviation depends largely upon the efficiency of aerial attack when using bombs or torpedoes.

The spectacular experiments of several years ago when the old battleships *Ostfriesland, Virginia* and *New Jersey* were sunk by bombardment from the air, demonstrated the ability of planes to make a certain percentage of hits on ships under certain conditions, but the results were inconclusive as to the effect of such hits upon modern capital ship construction. According to

press reports the experiments with the *Washington* will include the explosion of aerial bombs on or close to the ship.

This will give exceedingly timely and valuable information to the general board of the Navy, and enable it to make recommendation in regard to future aeronautical and battleship development which may not only save the country many millions of dollars in excess of the costs of experiments, but also result in greatly strengthening the sea defenses of our country.

NAVY DEPARTMENT
BUREAU OF CONSTRUCTION AND REPAIR
WASHINGTON, D. C.

VESSELS UNDER CONSTRUCTION, UNITED STATES NAVY—Progress as of October 31, 1924

Type Number and Name	CONTRACTOR	Percent of Completion				Contract date of Completion	Probable date of Completion
		Nov. 1, 1924		Oct. 1, 1924			
		Total	On Ship	Total	On Ship		
AIRPLANE CARRIERS (CV)							
2 *Lexington*	Beth. SB Cpn (Fore River)	53.9	49.1	52.7	47.4		Indefinite
3 *Saratoga*	New York S. B. Cpn	53.3	51.4	51.6	49.5		Indefinite
SCOUT CRUISERS (CL)							
13 *Memphis*	Wm. Cramp and Sons Co.	92.5	87.5	89.	82.5	4/ 1/22	1/31/25
AUXILIARIES							
Sub.Tender No.3, *Holland* (AS3)	Puget Sd. Nvy Yd.	51.5	46.7	50.9	46.1		1/ 1/26
SUBMARINES							
153 *S-42*	Elec. Boat Co. (Quincy)	99.5	99.5	97.5	97.5	5/15/23	11/—/24
154 *S-43*	Elec. Boat Co. (Quincy)	97.9	97.9	97.	97.	6/15/23	11/—/24
155 *S-44*	Elec. Boat Co. (Quincy)	96.2	96.2	95.4	95.4	6/15/23	12/—/24
156 *S-45*	Elec. Boat Co. (Quincy)	94.6	94.6	94.6	94.6	7/15/23	1/—/25
157 *S-46*	Elec. Boat Co. (Quincy)	94.5	94.5	94.5	94.5	7/15/23	2/—/25
158 *S-47*	Elec. Boat Co. (Quincy)	96.6	96.6	96.6	96.6	8/15/23	3/—/25
FLEET SUBMARINES							
164 *V-2* (SF5)	Portsmouth N. H. Nvy Yd.	73.4	72.6	72.1	71.3		5/ 1/25
165 *V-3* (SF6)	Portsmouth N. H. Nvy Yd.	61.2	60.	60.3	59.1		11/1/25
166 *V-4* (SM1)	Portsmouth N. H. Nvy Yd.	.1	.1	.1	.1		Indefinite

Authorized but not under construction or contract—no funds having been provided:
Destroyers—(12) Nos. 348 to 359 inclusive.
Transport—(1) No. 2.
Fleet Submarines—(5) Nos. 167-171.
Neff Submarine (1) No. 108.

Shipbuilders' Objections to Board's Policy in Conversion Program

The Nautical Gazette, 18 October, 1924.—Shipbuilders have filed a formal protest with the United States Shipping Board against the plan announced for the conversion of the first twelve steamers to be equipped with Diesel engines in the government's $25,000,000 motorship program. Objection is made to piecemeal bidding as required under the board's plan of first asking

for bids on the engines, later inviting bids on the auxiliaries and then contracting for the installation of this machinery.

It is contended by the shipbuilders, several of whom have purchased similar vessels from the Shipping Board and invested their own capital in equipping these ships with Diesel motors, that the divided responsibility which the board's method will establish and possible coupling of unsuited auxiliaries with the main engines will impair the efficiency of the whole program and may seriously retard motorship development in the United States, which is ten years behind Europe in accepting the advantages of the Diesel driven ship.

According to Clarence Samuel King, secretary of the Atlantic Coast Shipbuilders' Association, the claims of the shipyards, as presented through the Diesel engine committee of the association, are based on extensive experience developed over a long term of years in dealing with every type of contract, including those involving divided responsibility, and were submitted with the view of giving the Shipping Board the benefit of this collective knowledge and experience.

Fearful that the entire Dieselization program may prove a failure under the method adopted by the Shipping Board the members of the shipbuilders' association informed Chairman T. V. O'Connor they wished to go on record that in their opinion maximum economy of conversion consistent with production of the most efficient types of motorships can only be obtained through the placing of contracts for this work on the basis of a complete conversion, including the furnishing of all labor and material, rather than by following the plan as announced by the Shipping Board of entering into separate contracts for the engines, for the auxiliaries and for the installation thereof.

In their communication to the Shipping Board the shipbuilders point out that the plan they recommend has long since proven itself economically sound, is dictated by good business judgment, has been the established practice of the government through its Navy Department, and would again be advantageous to the government and a means of expediting and safeguarding the entire Diesel conversion program. It is stated further that the extensive research work and wide experience of several large shipbuilding organizations that have already successfully installed Diesel engines support this conviction, which is further endorsed by shipyards that do not build their own Diesel machinery and by some engine builders who do not install their own machinery .

"It will therefore be seen that representative concerns of the three groups that seek a share of the work to be released are of one accord as to the most practical method of handling it," says the letter filed with the Shipping Board. "Our whole effort has been directed toward this accomplishment so that the Shipping Board will be able to get full value for its money and be able to show Congress that the money was well spent."

The personnel of the Diesel engine committee of the Atlantic Coast Shipbuilders' Association includes four representatives of American shipbuilding companies that have built and installed Diesel engines and two representatives of shipyards that do not build Diesel engines. All of these shipbuilders, as well as the representatives of cooperating companies, are of the opinion that it will be advantageous to the government to avoid the divided responsibility involved by separate contracts for the engines, for the auxiliaries and for the installation thereof, and that the best interests of the taxpayers will be served by proceeding with the work on the basis of a complete conversion. Mention is made that these conclusions are based on operating as well as construction experience, as the shipbuilding companies identified with the association own and operate probably more Diesel ships of considerable size than all other American operators combined.

According to the secretary of the association the shipbuilders' committee

has held five meetings devoted entirely to consideration of the Shipping Board's motorship program, at one of which sessions there were present by invitation representatives of engine-building companies whose plants do not include facilities for installation, and of ship-repair yards not included in the membership of the association. Conferences have also been held with representatives of the Shipping Board to whom the Dieselization project has been entrusted and who were afforded full opportunity to explain the reasons why the Shipping Board continues to adhere to its original policy. Notwithstanding these explanations the shipbuilders continue to feel that the divided responsibility which will arise between the separate engine builders, the builders of the various auxiliaries and the shipyards that later install the machinery will prevent the Shipping Board from attaining the results and undivided responsibility which their proposals insure.

In citing a parallel case Mr. King says: "In connection with this matter it is of interest to refer back to a somewhat similar conversion program undertaken by the Shipping Board of 1920. Twelve freight steamers were selected for conversion, which consisted of removing the then existing propelling machinery and installing new propulsion machinery of a different type manufactured by an inland builder. Considerable publicity was given to this program, for which very optimistic claims were made and under which, like the proposed Diesel program, the Shipping Board purchased the main auxiliary propelling machinery and subsequently contracted for the installation of same in repair yards. The first of these conversions did not prove to be a success and the program was abandoned by cancelling the installation contracts after five ships were converted. Most of the machinery, however, had all been purchased and delivered and is now stored until its probable ultimate disposition as scrap. Had this program been carried out in the manner recommended by the shipbuilders' association for the present Diesel program, and contracts placed with responsible shipbuilding concerns for complete conversion the probabilities are that better coordination of work would have resulted in the program's being successfully carried out. Moreover, in case of failure the loss would have been borne by responsible contractors instead of by the government."

Diesel Engines Will be Placed on Eighteen Trade Ships

Baltimore *Sun*, 10 November, 1924.—Washington, November 9.—The first step toward modernizing a number of the war-time fleet of merchant vessels was taken by the Shipping Board yesterday when it authorized the installation of Diesel engines in eighteen cargo ships. Announcement of the action was withheld until today.

The board proceeded under authority conferred upon it by Congress June 6, 1924, when a bill was passed empowering it to use $25,000,000 of its construction loan fund for this purpose.

With the $25,000,000 authorized by Congress for carrying out the board's program of installing Diesel engines, it is estimated that approximately fifty of the government's cargo vessels will be converted. As fast as the vessels are converted they will take the place of the more expensively operated coal-and-oil burning vessels and thus reduce, to a great degree, the cost of operating the Shipping Board fleet, and will speed up the delivery of American goods carried in American bottoms.

The resolution passed by the board authorizes the purchase of eighteen Diesel engines, thirteen of which are of approved type, single-acting Diesels, as follows: Four, each of 3,000-shaft horsepower, from the Busch-Sulzer Diesel Engine Company, St. Louis; four, each of 2,800-shaft horsepower, from Cramp's Ship and Engine Building Company, Philadelphia; three, each of 2,700-shaft horsepower, from McIntosh and Seymore Corporation,

Auburn, N. Y., and two, each of 2,900-shaft horsepower, from Pacific Diesel Engine Company, Oakland, Cal.

For the purpose of developing a domestic Diesel industry and to secure such benefits of decreased costs, weight and space, as well as possibility of greater power, which the double-acting principle appears to offer, the board also has authorized the purchase of the following double-acting engines: One of 2,700-shaft horsepower from McIntosh and Seymour Company, Auburn, N. Y.; one of 3,000-shaft horsepower from Hooven, Owens Rentschler, Hamilton, Ohio; one of 3,000-shaft horsepower from New London Ship and Engine Company, Groton, Conn., and two each of 2,900-shaft horsepower from Worthington Pump and Machinery Company, Buffalo.

These eighteen units aggregate 51,650-shaft horsepower and an outlay of approximately $4,350,000, of which amount about $3,250,000 represents the cost of the single-acting group. The double-acting type represents twenty-two per cent of the total power and the relative average costs are $87.50 and $76.00 per horsepower, respectively.

While such prices undoubtedly will lead to a high total cost of conversion, members of the board pointed out that they represent a substantial reduction from the original bids, and were arrived at by negotiations characterized by the fullest cooperation of the builders. Material reductions are confidently expected on future orders through the experience that will be gained and development of the newer types which the board has sought to encourage in its first award.

There are only ten motorships of over 7,000 tons deadweight built and engined in this country. The vessels when equipped will have a speed of from 11 to 11.5 knots when fully loaded, or an improvement of at least 1 knot over the original steam plants.

The Sailless Windship

Washington Post, 10 November, 1924.—The sailless windship, which has given such complete satisfaction in its trial runs in the North Sea and is now lying in Kiel harbor awaiting further developments, is regarded by seafaring men as a discovery of the highest importance. Invented by Anton Flettner, it appears to consist of a hull carrying two revolving towers equipped with blades. When the wind strikes against the blades, the entire tower is turned, and the power so generated is conducted through the hull and sets the propellors in motion. According to the report, one man is enough to attend to the details.

Should the new method of propulsion prove generally practicable, it is easy to see the economies that can be effected both in fuel and fuel space. We may, indeed, be on the eve of a revolution in ocean transportation. At all events, so great a scientist as Einstein is of the opinion that the Flettner windship marks a new era in ship construction.

Steamship Company Tries Sailless Ships

New York *Sun,* 17 November, 1924.—London, November 16.—The Hamburg-American Steamship Company is so convinced of the importance of Anton Flettner's "rotor" system, which controls vessels without crew or sails, that it has decided to build immediately ten freighters of this type, of 10,000 tons each, says a Berlin dispatch to *Lloyd's Shipping Gazette.*

The company will also convert other ships to the "rotor" principle for freight service on the Asiatic route.

Herr Flettner informed the correspondent that sixty per cent of oil fuel could be saved on the Asiatic route, while the saving on the Rio Janeiro route would be fifty per cent and on the New York route between thirty-

five and forty per cent. The regions of trade winds and monsoons, he explained, were the most favorable for the exploitation of wind power by rotors.

For a license to use the rotor patent, companies will be charged ten per cent of the tonnage value of the ship in which they are installed, and the inventor maintains that such vessels will save the cost of the license in a single year.

First Seagoing Installation of Three-Blade Flettner Rudder

The Nautical Gazette, 18 October, 1924.—The first installation on a seagoing vessel of the new three-blade Flettner rudder is on the motorship *Therese Horn* which ran her trials on September 5. During these trials the new rudder was subjected to severe tests and passed them all successfully. For example, while the vessel was proceeding on a straight course at maximum speed the rudder was put hard over and the vessel performed a complete circle of a diameter equivalent to less than two lengths of the ship. This evolution was repeated several times, both port and starboard, with uniformly satisfactory results, and in the process of describing this circle it was possible to bring the vessel back to a dead straight course within fifteen to twenty seconds. Furthermore, it was found that with the vessel going dead slow, and with practically no way on, the steering qualities were excellent. Also, with the vessel completely stopped, only a few revolutions of the propellor were necessary to swing the vessel's head round when helm was given.

The accompanying diagram, Fig. 1, illustrates the arrangement of the rudder. The middle plane (1), carries at its rear end the Flettner fin (3). The side planes (2), are rigidly connected with the middle plane by supporting arms (4) and the whole rudder pivots around the shaft (5) which is connected with the rudder by means of a coupling (6). The parallel rods which operate the Flettner fin are enclosed in a protective casing (7). The distances between the planes are so gauged that the planes do not interfere with each other.

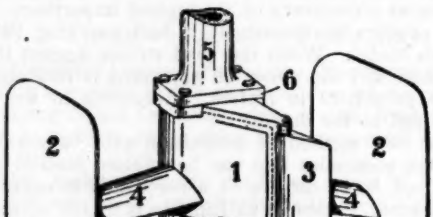


FIG. 1

Diagram of Three-Blade Flettner Rudder

The three-blade rudder possesses several special advantages. For example, the lower part of the rudder lies decidedly higher than the keel of the vessel. Also the uppermost parts of the rudder blades lie below the light

Three-Blade Flettner Rudder Installation on the *Therese Horn*

draught line of the ship so that they cannot be damaged by ice or floating matter. At light draught the total area of the three blades is submerged so that steering qualities are as good as in loaded draught. The main feature of this type of rudder, however, is that all three blades are under the influence of the water current coming from the screw. When the ship was describing circles at her trials the main and side blades stood at an angle of forty-five degrees to the ship and the auxiliary rudder at an angle of fifteen degrees to the main blade. The ease with which the rudders are turned allows a quickly counteracting turn to be given when a change of direction is made, so that yawing is reduced to a minimum. Going astern the smallest circle made was not much larger in diameter than when running ahead.

The Flettner three-plane rudder is arranged on the vessel so that it can freely pivot around its shaft, and it is maintained in its determined position with relation to the current merely by the auxiliary rudder. Only the steady lateral forces desired by the helmsman are transmitted by the rudder to the vessel. Sudden changes of current (as wave shocks and the like) cannot be transmitted to the vessel, as is the case with the old rudder, because the Flettner rudder yields to these changes. The steadiness of the course is therefore insured even in a rough sea, so that the vessel runs a straight course.

By this yielding of the three-blade rudder in rough sea, strong stresses are avoided so that breaking of the rudder or of its shaft is prevented.

The Flettner three-plane rudder weighs for a vessel of 15,800 tons carrying capacity 27,080 pounds, compared with a weight of 60,940 pounds

for electric steering. The saving of material amounts therefore to 33,860 pounds.

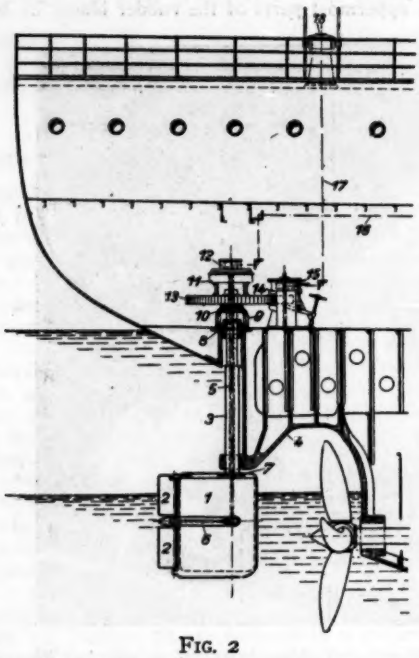


FIG. 2

Diagram of Three-Blade Flettner Rudder Installation for Single-Screw Steamers

1. Three-plane rudder.
2. Steering fin.
3. Rudder stem.
4. Bracket.
5. Steering fin transmission.
6. Operating levers.
7. Flange attachment.
8. Stuffing box.
9. Housing.
10. Ball bearings.
11. Drive.
12. Drive.
13. Gear for auxiliary steering.
14. Brake.
15. Auxiliary steering arrangement.
16. Axiometer transmission for operation.
17. Axiometer transmission for auxiliary steering.
18. Auxiliary steering gear.

ENGINEERING

Thirty-Day Test on Washington Double-Acting Diesel

Power, 4 November, 1924.—The salient features of the double-acting two-stroke-cycle Diesel engine built by the Worthington Pump and Machinery Corporation, at its Buffalo works, were discussed in *Power*, September 16. The builder undertook to prove performance of the single-cylinder unit, in which are embodied all the characteristics governing the operation of a multi-cylinder engine by a thirty-day nonstop run at full load and at rated speed. It will be recognized that such a test, rigorously and literally carried out, was of unusual severity; not because of any inherent basic difficulties, but because of the possibility of minor failures, or need of adjustment in comparatively insignificant and non-essential details, any one of which might cause interruption.

In order to avoid any question as to complete authenticity of performance, the test was run under continuous observance of Shipping Board representatives. The complete and absolutely uninterrupted continuity of this run indicates that the engine possesses those characteristics necessary in an engine of this size.

The run began at 10:05 P. M., September 25, and closed at 10:05 P. M., October 25. The engine was operated at a speed of 90 r.p.m. with an average load of about 62 brakes m.e.p., which is substantially identical with the commercial rating of the engine. The load was absorbed by a water brake, and a continuous log has been kept under the observation of Shipping Board representatives. Essential observations were taken at two-hour intervals, indicator diagrams were taken on each eight-hour shift, and tests of fuel consumption and lubricating oil were made weekly. Examination of the log shows an astonishing uniformity and consistency of performance. The engine has been notably cool in bearings, piston rod and cylinders and the exhaust clear and clean.

The following results were attested by Oscar Olson, representing the Shipping Board, and R. C. Mathewson, representing the builder:

Beginning of test, September 25, 10:05 P.M.	
Termination of test, October 25, 10:05 P.M.	
Duration of test hours	720
Total number of revolutions during test	3,879,921
Average, r.p.m.	89.8
Average brake load, lb.	2,400
Length of brake arm, ft.	15
Average brake horsepower	615
Average indicated m.e.p., top cylinder, lb.	81
Average indicated m.e.p., bottom end, lb.	77
Average indicated horsepower	778
Fuel oil consumption average of four 2-hour tests per b.hp. hour, lb.	0.428
Gravity of fuel used, deg. Bé.	28 to 32
Fuel oil consumption per i.hp. per hour, lb.	0.339
Mechanical efficiency measured during the four tests, per cent	79.5
Lubricating oil consumed in the cylinder and piston-rod stuffing box per 24 hours, gal.	4.03
Average exhaust temperature, deg. F.	510

The engine ran at a steady speed, without a single stop, during the entire period of the test. The exhaust investigated close to the outlet from the cylinder, was at all times invisible.

Readings of temperatures of cooling water, exhaust gases, cylinder liners, etc., and of pressures of scavenging air, injection air, oil pressure, etc., were remarkably steady during the entire period of the test. The running

of the engine was as smooth as that of a steam engine, and was marked by an entire absence of harmful vibrations.

A Large German Diesel Engine

The Engineer, 17 October, 1924.—A German shipbuilding journal states that a Diesel engine now under construction in the Blohm and Voss shops at Hamburg will be the largest of its type in the world. This engine has been ordered by the Hamburg Electricitäts-Werke for its new power station, and is to drive a three-phase generator with a capacity of 10,000 kilowatts, which is being manufactured by the Siemens-Schuckert Company. The engine is being built under license from the Maschinenfabrik Augsburg-Nürnberg. It is of the double-acting two-stroke cycle type, with port scavenging, and has nine cylinders, each of 860 mm. bore and 1500 mm. stroke, and is designed to develop 15,000 brake horsepower at 93.75 revolutions a minute. According to the same journal, the largest oil engine now existing is a double-acting four-stroke cycle marine motor on the Burmeister and Wain principle. The engine has eight cylinders of 840 mm. bore and 1500 mm. stroke, and develops about 8000 brake horsepower at 125 revolutions. This is equivalent to an output of 1000 brake horsepower from each cylinder, whereas the new German engine is to develop 1670 brake horsepower per cylinder at fewer revolutions and with a much reduced piston speed. With the addition of reversing gear it would at once become available for propelling a ship. In this connection the growing popularity of the motor ship in Germany deserves to be noticed. The latest returns of *Lloyd's Register* show that out of a total of 378,522 tons of shipping now under construction in that country, 279,226 tons are motor ships.

Non-Corrosive Turbine Blading Materials

Power, 21 October.—Anti-corrosive materials as used by the Westinghouse Company are given in Table I and by the Allis-Chalmers Company in Table II, as reported at the World's Power Conference.

TABLE I—LOW CARBON FORM OF STAINLESS STEEL

	Per cent.		
Carbon	0.07	to 0.12	Proportional elastic limit ..... 60,000 lb.
Manganese	0.80	maximum	
Phosphorus	0.03	maximum	Ultimate tensile strength ..... 90,000 lb
Sulphur	0.03	maximum	
Silicon	0.25	maximum	Elongation ..... 20 per cent in 2 in.
Chromium	11.50	to 13.00	Reduction of area 60 per cent
Nickel	0.60	maximum	Izod impact .... 50 ft.-lb.

The heat treatment after forging consists of quenching in oil from 1,750 deg. F., drawing at 1,200 deg. and cooling in oil. In this heat-treated condition the minimum physical characteristics are as given. The present objection to its use is cost.

TABLE II—RUSTLESS NICKEL-CHROMIUM STEEL IN A ROLLED CONDITION

	per cent.		
Carbon	0.35	to 0.50	Proportional elastic limit ..... 60,000 lb
Manganese	0.50	to 1.50	
Phosphorus	0.04	to	Yield point ..... 80,000 lb.
Sulphur	0.05	to	Ultimate tensile strength ..... 130,000 lb.
Silicon	0.75	to 1.50	
Nickel	19.00	to 25.00	Elongation .... 26.0 per cent in 2 in.
Chromium	6.00	to 9.00	Reduction of area 50.0 per cent

This material is quite non-corrosive, but is difficult to work, especially in machining. The cost is high.

Operation of Carbon Dioxide Refrigerating Plants

By G. Grow, *Power*, 21 October, 1924.—While practically all refrigerating machines on shipboard, and the majority of such plants in England make use of carbon dioxide, the refrigerating engineers in this country are not so familiar with the details of operation of this type of apparatus as in the case of ammonia systems. As a consequence many engineers are hesitant about assuming charge of a CO_2 plant and even though it may possess advantages over ammonia, for a particular installation, it is by no means uncommon to find engineers discouraging its adoption by reason of their lack of information.

Carbon dioxide is under ordinary temperatures and pressures a colorless gas and in order to liquefy it by water cooling, the gas must be compressed to a very high pressure. The temperature at which the liquid carbon dioxide will boil when under various pressures, which are at the same time the pressures to which the gas must be raised to cause it to liquefy when cooled to the corresponding temperatures, are shown in the accompanying

PROPERTIES OF SATURATED CARBON DIOXIDE

Pressure Lb. Sq. In. Gage	Temp. Deg. F.	Vol. of Liquid Cu. Ft.	Vol. of Vapor Cu. Ft.	Heat of Liquid (h)	Heat of Vaporization (L)	Total Heat (H)
130	—40	0.01438	0.609	0	136.3	136.3
159	—30	0.01464	0.495	5.2	132.1	137.3
199	—20	0.01496	0.408	10.4	127.4	137.8
219	—15	0.01514	0.371	13.0	125.1	138.1
241	—10	0.01532	0.337	15.7	122.7	138.4
264	— 5	0.01552	0.308	18.4	120.1	138.5
288	0	0.01570	0.282	21.0	117.5	138.5
314	5	0.01591	0.257	23.8	114.8	138.6
343	10	0.01613	0.234	26.5	112.0	138.5
374	15	0.01637	0.215	29.2	109.0	138.2
406	20	0.01663	0.197	31.9	105.8	137.7
440	25	0.01689	0.180	34.7	102.5	137.2
475	30	0.01718	0.166	37.5	98.9	136.4
513	35	0.01748	0.152	40.5	95.1	135.6
553	40	0.01783	0.140	43.4	91.2	134.6
595	45	0.01820	0.128	46.3	87.3	133.6
638	50	0.01863	0.117	49.3	83.1	132.4
684	55	0.01908	0.107	52.4	78.7	131.1
732	60	0.01953	0.097	55.4	74.1	129.5
782	65	0.02000	0.087	58.4	69.6	127.0
835	70	0.0210	0.078	61.5	63.3	124.8
891	75	0.0223	0.070	64.6	56.5	121.1
950	80	0.0245	0.061	67.6	47.1	114.7
1,014	85	0.0289	0.054	70.7	33	103.7
1,063	88.4	0.049	0.049	72.7	0	72.7

table. It will be noticed that with the condenser at 70° F. and a difference between the water and the liquid CO_2 of 10°, making the latter temperature 80°, that the liquid will boil if the pressure is below 965 pounds absolute (950 pounds gage) or the gas will liquefy if the pressure is raised the slightest amount over 950 pounds gage. Inspection also reveals that the evaporating pressure at a temperature of 0° F. is 303 pounds absolute or

288 pounds gage. These temperatures are approximately those found in a plant but the need of a high discharge pressure is apparent. Since a coil temperature of below 0° F. is seldom required, the coil pressure need not be much under 300 pounds gage. While lower coil pressures and temperatures could be carried, the power required to operate the compressor depends upon the ratio between discharge and suction pressures and as high a suction pressure as possible should be carried.

These high pressures introduce problems of compressor design and piping arrangement not encountered in ammonia plants. It has been the practice in the past to equip the compressor with a piston having leather cups instead of metal rings. This was and is a poor makeshift, for there is no reason why a piston with well made snap rings should not prevent leakage. In fact, as long as the high pressure is more than twice the low pressure, the amount of leakage through a given opening is not changed regardless of how high the high pressure may be. In other words, ammonia and CO_2 will show the same leakage by a piston.

The stuffiing box likewise will offer no more troubles than one in an ammonia compressor. However, CO_2 has one disadvantage in that a leakage of ammonia will make itself evident by its smell while carbon dioxide may leak badly and go undetected by reason of the absence of odor.

The lubrication of the carbon-dioxide compressor does not offer the difficult problem encountered with the ammonia machine. In the latter compressor the temperature reached during compression of the ammonia gas may be very high. This high temperature tends to break down many lubricating oils and is in any event high enough to cause evaporation of a considerable percentage of the oil. This should be trapped out by a separator but in practice the oil compresses in the condenser and mixes with the ammonia forming an emulsion or sludge in the evaporating coils. On the other hand the discharge temperature in a CO_2 machine is under 200° F. and the gasification of the lubricant is greatly reduced. In addition CO_2 does not emulsify with the oil and if any of the latter is carried over to the coils it flows along without the formation of a sludge.

It is impossible to state the exact amount of lubricating oil to be fed to a compressor. For a machine of under ten tons five to seven drops per minute should be sufficient for the cylinder and if five drops per minute be fed to stuffing box this oil finally enters the cylinder, insuring ample lubrication.

The comparative low temperature in the cylinder eliminates all danger of gumming rings. The chief danger is in the scoring of the cylinder by badly fitting rings, and as the cylinder is of steel, reboring or replacement is expensive. In putting in new rings they should be fitted to the cylinder. In doing this the surface of the cylinder should be coated with lamp black or red lead for a distance of, say six inches. The ring ends are then pulled together until the ring slips into the cylinder. By pushing on opposite sides of the ring the latter may be moved enough to cause the lamp black to be rubbed off the cylinder into those parts of the ring that touch the cylinder surface. These high spots should be rubbed down with emery paper until the entire ring coats on being shoved into the cylinder. A good fit of the rings is essential for the cylinder diameter is small and the stroke long, making a leak a serious matter.

The condenser is in most units placed very close to the compresser with the intention of eliminating as many joints as possible. If joints are well made either by welding or by the use of special connectors, such as used in high-pressure air lines, leakage may be avoided.

Leakage danger is the objection most often raised against the CO_2 machine. The belief is prevalent that the breathing of carbon dioxide would result in death from poison. This gas, on the contrary, is absolutely inert and will not kill one any more than will water. If one is placed in an

atmosphere composed of CO_2 death will follow by reason of the exclusion of the life-giving oxygen. Fortunately, carbon dioxide is much heavier than air and when the machine is installed in basement the fumes will settle down close to the floor and will not mix with the air. The system is the safest for hospitals, apartment houses and hotels.

The real objection to leaks comes from the loss of CO_2. If peppermint oil be added to the CO_2 a leak will readily reveal itself by the peppermint odor. To discover the location of the leak, the sense of smell is the best means where peppermint oil has been added to the system. Otherwise the use of soapsuds is the most practical way.

One Way to Dodge Entropy

Power, 28 October, 1924.—Engineers have always found it advantageous to compare the actual efficiencies of the engines they operate with certain standards. Two standards are in general use for this purpose, both of them being ideals that may be approached but never quite reached in practice. One of these is a universal standard, applying to all heat engines including the steam engine[1]. This is known as the Carnot cycle.

It has been absolutely demonstrated that no heat engine of any sort whatever can have a better efficiency than a perfect engine working on the Carnot cycle between the same temperature limits.

The second standard is known as the Rankine cycle. It applies only to steam engines. An imaginary perfect steam engine working on the Rankine cycle will have an efficiency somewhat lower than that of an engine working on the Carnot cycle. It should be mentioned in passing that the Carnot cycle is theoretically possible for steam engines, but does not seem to be practicable. However, the regenerative or bleeder-heater cycle, now coming into general use, gives the same efficiency as the Carnot cycle when completely applied to a perfect engine.

The actual or thermal efficiency of any engine whatever (whether it be an actual steam engine, an actual oil engine or an imaginary perfect engine working on any cycle) is the ratio of the heat turned into work to the total heat supplied. If 1,000,000 B.t.u. are supplied to a steam engine during a certain period and 200,000 turned into work, the thermal efficiency is twenty per cent.

The Carnot cycle is one in which all the heat is received by the engine at a single high temperature and all the heat remaining after part of that supplied has been turned into work is rejected at another single temperature, which of course is lower than the first. The efficiency of a perfect engine working on this cycle is expressed by the formula

$$E = \frac{T_1 - T_2}{T_1}$$

where E is the thermal efficiency T_1 the absolute temperature at which heat is received by the engine and T_2 the absolute temperature at which it is rejected. Absolute temperature is figured by adding 460 to the Fahrenheit temperature.

Any other engine working between the same upper and lower temperature limits, but receiving part of its heat at a lower temperature than T_1 or rejecting part at a higher temperature than T_2, will be less efficient. This is the case with the Rankine cycle.

In the Rankine cycle steam is admitted to an engine (or turbine) in the usual manner, expanded completely to the back pressure and then exhausted

[1] Throughout this article "steam engine" is used in a broad sense to include both steam turbines and reciprocating engines.

through a heater that furnishes the boiler with feed water at the exhaust temperature. The term "engine" must be understood to include the entire water-and-steam circuit. All the heat rejected is at the lowest or exhaust temperature T_2, just as in the case of the Carnot cycle. Not all, however, of the heat added is supplied at the higher temperature T_1, which is the temperature of the steam at the throttle. All the heat used in the boiler to warm up the feed water from the exhaust temperature to that of saturated steam at the boiler pressure is added at temperatures below T_1.

Fortunately, it requires much more heat to evaporate the water than it does to warm it up to the saturation temperature. All this heat of vaporization is added at constant temperature. Where the engine operates on saturated steam this is the top temperature T_1. Thus the efficiency of a perfect Rankine engine operating on saturated steam is from 85 to 100 per cent[2] of that of a Carnot engine.

With superheated steam the latent heat is added at a temperature considerably below the highest temperature T_1. As a result the efficiency of a perfect engine working with superheated steam is considerably lower than one working with saturated steam *for the same maximum temperature.* For the same *pressure* (the usual case in practice) superheating increases both the actual and theoretical efficiency, although nowhere near so fast as the same rise in temperature would increase the efficiency of a Carnot engine.

Since the Rankine cycle is so widely used, it is unfortunate that all the methods now in vogue for figuring the efficiency of a perfect Rankine engine require the use of "entropy." While fairly easy to handle as far as the actual figuring is concerned, no concept in steam engineering is harder to grasp. Most engineers find it impossible to get a satisfactory picture of entropy in the sense that they picture heat, temperature and pressure. At best it seems a mathematical abstraction.

It therefore seems worth while to develop other more easily pictured methods for figuring the efficiency of a perfect Rankine engine. Perhaps the most satisfactory method is to split the cycle up into steps and apply the Carnot formula separately to each step.

Each bit of heat added during the cycle is used with an efficiency figured by the Carnot-cycle formula, using the particular absolute temperature at that point for T_1 and the exhaust temperature for T_2. For example, heat added to the feed water at a temperature of 300° F (760 absolute) with an exhaust temperature of 220° F (680° absolute) is used with an efficiency of

$$\frac{760 - 680}{760} = 0.105.$$

The application of this method can best be explained by an example. Take the case of a perfect Rankine engine using steam at 200 pounds absolute pressure and 100° superheat, the exhaust pressure being one pound absolute. From the steam tables it is found that the exhaust temperature is 102° F., the evaporation temperature 382° F., and the superheat temperature 482° F. It is also found that the heats added in various parts of the cycle are as follows: Heating up feed water, 285 B.t.u.; evaporation, 843 B.t.u.; superheating, 59 B.t.u. While not absolutely equivalent to what actually happens, no appreciable error will be incurred by assuming that the heat added in warming feed water or in superheating is added at a constant temperature halfway between the initial and final points. The average temperature is 242° F. (702 absoute) for the feed heating and 432° F. (absolute) for the

[2] The less the expansion the closer the efficiency of the Rankine engine approaches that of the Carnot engine.

superheating. Evaporation occurring at the constant temperature of 382° F. (842 absolute), no approximation is there necessary.

The efficiency of use of the heat supplied in warming the feed water will then be $\frac{702 - 562}{702} = 0.199$, and the heat turned into work, $0.199 \times 285 = 57$ B.t.u. In the same way the heat turned into work in the next two steps will be 280 B.t.u. for the latent heat and 22 B.t.u. for the superheat. This useful heat totals up to 359 B.t.u. The total heat supplied in the three steps is $285 + 843 + 59 = 1{,}187$ B.t.u. Therefore the efficiency, or the fraction turned into work, is $359 \div 1{,}187 = 0.302$.

That the assumptions made in this computation do not involve any appreciable error may be seen by comparing this result with that obtained by the orthodox method of computation using entropy. The result thus obtained is 0.301.

Ramsay Diesel Governor

Motorship, August, 1924.—Overspeed and emergency governing of marine oil engines is accomplished by modifying the action of the fuel pump. Owing to the small size of the individual fuel charges which are pumped, light simple mechanisms can be employed and a stoppage of the fuel instantly deprives the engine of the energy supply which is necessary for overspeeding. In the case of a triple expansion steam engine the vacuum as well as the steam present in the intermediate piping and receivers does not come under the control of the throttle, with the result that it cannot be stopped nearly so promptly. Precise regulation can be secured for the Diesel engine with considerably greater ease.

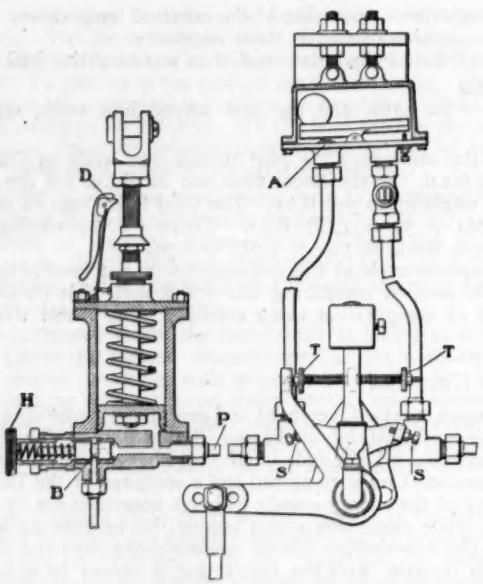
Among the most interesting of the speed-regulating devices that have recently been perfected for guarding against dangerous speeds at sea is the Ramsay governor.

Since it operates by means of an air relay, it is more than capable of being adapted to any of the existing means for influencing the discharge of a fuel pump, quite irrespective of the amount of force that may be demanded. A push of 1,000 pounds or more is readily obtainable on the spindle of the air cylinder.

Acting as it does on the well-known inertia principle, it is characterized in addition by two distinctive features. One of these is that it is capable of delivering two inertia impulses per revolution of the engine and the other is that it acts in advance to reduce fuel supply before the propeller actually gets out of the water and restores the supply before the wheel is again fully measured. As a consequence of these two features it is better suited to maintain evenness of operation than those devices which are single-acting and which operate only after the effects which they are to correct have become pronounced.

Referring first to the line drawing there will be seen a set-screw weight which is oscillated by means of springs from some drive taken from the fuel pump gear or other part that reciprocates in unison with the engine. If a rise in speed occurs, the swing of the weight becomes sufficient to actuate both of the two tappet screws that limit its travel. Since the screws are attached to a valve, any displacement of which from the central position causes a flow of air in the tube on which it is located, it is plain that an air pressure impulse will be set up in the tubing at each blow from the weight. Air for this purpose is taken by means of a valve reducing to twenty-five pounds per square inch from some permanent source of supply such as a starting pipe.

Air pressure is thus communicated to a small cylinder containing a piston



AIR-RELAY GOVERNOR. IF THE OSCILLATING WEIGHT HITS SCREWS S (EITHER ONE) AIR REACHES P AND RAISES PISTON

attached to the fuel cut-out mechanism on the fuel pump. A small spring loaded pilot valve first allows a fraction of the air impulse to escape to the atmosphere, but in doing so it moves to the left and automatically closes the atmospheric vent. The rest of the air impulse spends itself in moving the piston and thereby interrupting the fuel supply, after which the spring on the pilot valve returns the latter to the vented position and allows the air in the system to escape. Owing to the fact that the small spring is under the control of a hand screw and jam nut, it can be set in such a way as to give the proper travel to the piston.

Should the weight strike a particularly heavy pair of blows, more air is allowed to pass, the piston rises higher and catches under the pawl shown on the outside. This is what would happen if the propeller should come loose or the shaft should break. The complete stoppage of the engine would give warning to the operators and would effectively prevent the machine from "running away." For ordinary racing conditions due to a variation in load such as may be caused by a following sea, the double air impulses accompanied in each case by an automatic return of the piston are sufficient to maintain practically normal speed.

The most noteworthy feature, by virtue of which excessive speed fluctuations are prevented even from arising, consists in the anticipating valve shown near the top of the line drawing. When the vessel pitches forward preparatory to thrusting the propeller out of water, the ball on the balance valve, which is mounted in a fore-and-aft position and which may be adjusted to any trim of the ship, rolls to one end and admits air to the piston irrespective of the position of the inertia weight. When the ship rights herself before reimmersing her wheel, the ball rolls back and the vent-valve

allows the piston to come back and to re-establish the fuel supply even before a serious drop in speed has occured. Excessive speed fluctations are thus eliminated and the possibility of making better mileage even in the face of heavy weather is considerably enhanced.

Vessels which have been thus equipped and which have been giving a satisfactory account of themselves are the *Scottish Maiden, Scottish Standard, Scottish Minstrel,* and *Scottish Musician,* all propelled by Vickers airless injection engines. Two-cycle air-injection engines similarly protected are those of the *Scottish Borderer, Silverpine,* and *Iossifoglu.* Because of the double-impulse feature of the Ramsay governor its sensitiveness is sufficient to make it suitable for a great many classes of stationary work.

AERONAUTICS

The Naval Aircraft Investigation

FINISH FIGHT LOOMS IN BATTLE-AIRPLANE CONTROVERSY

By M. H. McIntyre, *Aviation,* 10 November, 1924.—Regardless of the outcome of the investigation now being made by the General Board of the Navy under instructions by the Secretary and at instigation of the President, a show-down fight in the old airplane-battleship controversy looms when Congress reopens in December.

Whatever the findings of the board, and it is admitted on all sides that they must be predicated on the basis that the battleship is still the main reliance in sea power, air enthusiasts are laying plans for a drive on Congress to get full recognition of the increasing importance of aviation in the national defenses with a separate air force as their final objective.

Heartened by President Coolidge's recent utterances in which he voiced his belief in the possibility of the airplane superceding the surface fighting ship, they propose to demand that an impartial tribunal hear their case and that the aerial fighting forces be placed in a position to be developed free from the "obstructionist" in the military services.

On the other hand naval officers are gravely concerned over the recent developments, realizing the popular appeal of the aviation propaganda with its promise of cheap and effective national preparedness. They fear that, as intimated by the President, no provision will be made for modernizing the older battleship, for proper maintenance of the fleet and for new construction unless the controversy over the relative merits of aircraft and battleship is finally and definitely settled.

Suggestion has been made to President Coolidge that a commission be appointed, composed of both civilians and army and navy officers, to make a thorough investigation of aviation development in all of its different phases and formulate a definite national policy for promoting and using to the fullest this newest weapon for defensive warfare. At the some time this board could determine whether there is any basis for the extremists' belief that flying craft has or may render the surface fighting craft obsolete, its findings to be final through the services, thus ending the bitter controversy that has been waging since shortly before the bombing tests about three years ago.

It is proposed that this commission shall consist of about ten or twelve members, with a cabinet officer or other nationally known man at its head and with General Pershing or a ranking army officer, and an admiral of the Navy to represent the service viewpoint, with possibly General Patrick and Rear Admiral Moffett as the service aviation representatives, and representation from the Senate and House and other civilians.

Ordinarily such a commission would be named only with congressional approval, but it is pointed out that the President could act in this case on

his own initiative, having the hearings under the auspices of the joint aeronautic board and using funds already appropriated for the two services.

Ordinarily such a commission could go into the commercial aspects of aviation as it applies to the national defense plans and after hearing all sides of the military phases, formulate a definite national policy that would provide plans for complete development of aviation to put this country in the forefront among the great naval powers.

On both sides of the controversy in Army and Navy circles the conservative element favors some action to put an end to the interservice bickerings by finding a sane solution to the problem and establishing the status of aviation. Regardless of the future possibilities of aviation, this element, which incidentally comprises a preponderant majority of Army and Navy officers, feels that it is folly to talk of abandoning recognized weapons of warfare until this new method has demonstrated fully what it can do.

The round-the-word flight by the Army Air Service fliers, spectacular and epochal as it was, did not, in the opinion of the great majority of experts, warrant the conclusions drawn in some quarters. The one outstanding lesson of the achievement, they say, was that it demonstrated conclusively the dependence of aircraft on surface ships in long-distance work. It is pointed out that while the fliers were covering their twenty-odd thousand miles of flight, approximately 87,000 miles of steaming was done by the United States naval vessels in helping to put the flight across. In addition to this was the assistance given by the Coast Guard of the Japanese Navy. Until planes having sufficient flying radius to be independent of surface craft on trans-ocean flights are developed, they argue, talk of the obsolescence of surface fighting craft is absurd.

In the Navy there is a feeling of resentment, smoldering and, naturally, little discussed, over the service being made the catspaw in what started out, according to press accounts, as a political squabble. On the heels of Secretary Wilbur's recall by the President from his western trip, the President let it be known that he desired to take up with the naval head the question of aviation development in the Navy. His views as interpreted by the press caused consternation in naval circles, as they showed a strong leaning toward the air enthusiasts' theory that aircraft has developed to the point where it threatens to render the battleship obsolete.

Mr. Coolidge is quoted as having serious doubts about the advisability of spending any money on the modernization or major repairs of the old battleships, none of which can be replaced within the next ten years, and as having coupled this with a reference to the round-the-world flight as demonstrating that aviation development had made the continuation of relying on the surface fleet as the basis of sea power a doubtful policy.

Had he followed this up with the appointment of a board such as is now being urged and had such an impartial tribunal made an exhaustive investigation of all phases of the airplane-battleship controversy, the services feel that the whole situation could have been clarified and that real good would have resulted.

The action taken, however, in referring the question to the General Board of the Navy, it is generally believed, will serve merely to heighten the controversy and accomplish only the useful purpose of a better understanding throughout the service of the aviation branch.

Obviously the General Board, having a very definite and clear-cut air policy which was formulated within the last few years since the armament conference, and being on record a year and a half ago as holding that the battleship was still the backbone of sea power, cannot now predicate its findings on any other basis, as no startling developments have occurred in aviation progress since that time.

Whatever the General Board can do in leaning toward a more liberal

policy toward aviation in the Navy will not satisfy the ardent proponents of the airplane as premier of war weapons. It is freely predicted that an attack will be launched on the board's findings and that the fight will break wide open when Congress convenes. Indicative of this, officers say, is the recent speech of General Mitchell, Assistant Chief of the Army Air Service, at Dayton, in which, speaking as the "representative" of President Coolidge for the occasion, he openly advocated a separate air force and predicted its early creation.

Covert charges have been made from time to time that naval officers have not been fully awake to the possibilities of aviation and the importance of developing it. In the case of some few individuals there has been some hostility shown toward recognition of the value of aircraft and there is general resentment over the "unfair" tactics used in some quarters to force aviation at the expense of the Navy generally. The general board, contrary to common opinion, has backed up the demands of the Bureau of Aeronautics for adequate appropriations. It favored the original estimates submitted this year and opposed the budget cut. The real "thumbs down" on airplanes in the Navy has been in the hands of a very few officers, but with the rank and file on the defensive to head off the "destructive" policy that would scrap the Navy, the public has been given the impression that the higher grades have been obstructing all efforts to really advance the air defenses.

Under precept from the Secretary to "consider the recent developments in aviation for the purpose of recommending a policy with reference to the development and upkeep of the Navy in its various branches—with particular reference to the appropriations to be made at the coming session of Congress," the General Board has plunged into its investigation wholeheartedly, though fully aware of the conditions to be faced.

With the Secretary taking part most of the time, hearings are being held twice daily, the sessions lasting two or three hours each. So far the testimony submitted has been from officers of the Bureau of Aeronautics and other technical bureaus, forming a groundwork for what is to follow. It is proposed to hear Rear Admiral Fullam, Rear Admiral Sims, General Mitchell and other ardent proponents of aviation, and every effort will be made to give all sides a hearing.

Present Naval Air Policy Centered on Planes Operating from Fleet

In December, 1922, the General Board of the Navy promulgated a new United States naval policy predicated on the naval treaty of the limitation of armament conference which gave the United States for the first time a definite naval policy, that of maintaining a Navy equal to that of Great Britain and in the ratio of 5-3 to that of Japan.

The following is the air policy which has been officially adopted:

To complete rigid airships now under construction and to determine from their performance in service the desirability of further construction.

To build non-rigid airships for development purposes only until their usefulness shall have been proved.

To direct the principal air effort on that part of the air service that is to operate from ships of the fleet.

To direct development of heavier-than-air craft principally toward spotting planes and toward torpedo, bomb and scout planes that can operate from ships; to combine the three latter functions in one plane.

To develop a combat plane for use afloat.

To acquire combat planes only as necessary for training and for current requirements.

To develop a scouting seaplane of long range for operations from a shore base or from a tender.

To operate a spotting plane from each capital ship and from each modern cruiser.

To determine by trial the practicability and desirability of operating additional planes from capital ships and from cruisers.

To determine by trial the practicability and desirability of operating planes from destroyers and submarines.

To give every possible encouragement to aviation in civil life with a view to advancing the art and to providing aviators available for war.

Navy to Get Flying Boat Capable of Carrying Five Men to Honolulu

Washington *Star*, 13 November, 1924.—A contract for a naval flying boat capable of making a sustained flight from the west coast to Honolulu has been signed by the bureau of naval aeronautics. Specifications call for a proven capacity of five passengers and a ton of freight.

The contract was regarded in naval circles as the first step toward filling a recognized deficiency in the fleet for long distance maneuvers, and if it meets expectations the new plane will be used as a model for the organization of a special fleet auxiliary capable of independent operation 2,500 miles from permanent base.

The contractor for the flying boat is the Boenig Aircraft Corporation of Seattle. It will be equipped with two 800-horsepower, twelve cylinder engines, the most powerful airplane motor unit ever built in this country. A contract speed of more than 100 miles an hour is required.

Naval designers estimate that each of the engines would be powerful enough to drive the plane singly and that at normal operating efficiency it could negotiate the round-the-world flight without assistance from surface vessels.

Two other planes, of new designs and marking a distinct advance over present naval types, are to be constructed at the Philadelphia navy yard. The first of these, designated the *PN-7*, will be completed in December and will be expected to have a cruising radius of more than 2,000 miles. If the Honolulu flyer is satisfactory it is planned to equip the other planes with the same motors and thus increase their radius of action.

NAVIGATION AND RADIO

Navy Hydrographers to Chart Venezuela Coast

Army and Navy Journal, 25 October, 1924.—Announcement was made by the Hydrographic Office of the Navy that the converted yacht *Niagara*, Captain Paul Blackburn, U. S. N., commanding, will make a survey of the coast of Venezuela and of the Gulf of Venezuela for the purpose of making navigation charts of this area. Very little survey work has been done on the Venezuela coast up to the present time, and the best charts now published are inaccurate. Captain F. B. Bassett, hydrographer of the Navy, in announcing this project, states that his office will publish accurate and reliable charts which will permit vessels of the Navy and the merchant marine to navigate these treacherous waters with safety.

The *Niagara* is fitted with the Navy's newly developed depth finder which measures the depth of water by echo of sound from the bottom. Sound is sent out by the instrument, strikes the bottom, and is returned to a receiver. In water, sound travels at the rate of 4,800 feet a second. The necessary arrangements have been made by the State Department with the Venezuelan Government for conducting these surveys, and their cooperation is assured.

The *Niagara* is 282 feet long, has a draft of seventeen feet and a displacement of 2,600 tons. She was built in 1898 by James Shewan and Sons, Brooklyn, N. Y., and was purchased by the Navy during the World War.

Radio Progress

Army and Navy Journal, 25 October, 1924.—Radio communications with the *Shenandoah* and the *Los Angeles* last week was extended to a marvelous radius, according to reports that have been received at the Navy Department. The question is naturally being asked if the ability to broadcast from them while in the air does not give lighter-than-air ships a distinctive military value.

The Bellevue experimental laboratory picked up the *Los Angeles* at midnight on October 15 as she approached the Atlantic Coast and kept in touch all the way down until she reached Lakehurst at 9:00 A. M. Bellevue even heard the telephone communications of the *Los Angeles* with Lakehurst.

While the *Shenandoah* was at her mooring mast at San Diego, the *Canopus* heard distinctly the wireless signal of the airship at a distance of 4,400 miles. The *Canopus* was at sea at the time. Other reports are expected of what has been accomplished in this direction in maintaining communications with ships at sea and shore stations with the airships.

MISCELLANEOUS

Problems in Cruiser Design

The Engineer, 31 October, 1924.—Before the year is out, all the five cruisers authorized under the current Navy Estimates should be well in hand. The *Suffolk* was laid down at Portsmouth on September 30, the *Cornwall* at Devonport nine days later, and work is to begin at an early date on the *Kent*, which has been assigned to Chatham. The *Cumberland* is to be built by Vickers Limited, and the *Berwick* by the Fairfield Shipbuilding Company. No announcement has been made as to the date of completion of these vessels, but for Budget reasons the building period will probably extend to three years. That the five ships, and many more of the same type, are urgently needed, is obvious to everyone in touch with naval affairs. It is doubtful whether at any time during the steam era the British Navy has been so deficient in fast cruisers of the ocean class as it is today. Until the new ships are ready for service, we shall have only four cruisers that approach the standard of size, speed and power requisite for commerce protection duty. These are the units of the *Improved Birmingham* class better known as the *Raleigh* class, the former designation having been adopted during the war—probably for reasons of camouflage. With their displacement of nearly 10,000 tons, a sea speed of 30 knots, and an armament of seven 7.5-inch guns, they are excellent ships for long-distance patrol service, but there are only four of them, and the trade routes of the Empire represent a total length of 80,000 miles. It will be observed that we omit the *Emerald* and the *Enterprise* from the category of cruisers available for trade defense. True, they displace 7,600 tons and are designed for a speed of 32 knots at full load, but we imagine them to be intended rather for service with the fleet than for independent cruising. In any case, they are too feebly armed to be matched against the powerful ships that have been ordered by foreign governments since the Washington Conference. Mounting only seven 6-inch guns, their broadside fire is no heavier than that of vessels of the *D* class, which are 3,000 tons smaller; nor are their defensive qualities believed to be superior. As regards fighting power, these two ships do not impress us as a particularly sound investment. We hope that the new government will have the courage to introduce next year a further program of cruiser construction. Our requirements in this type have been estimated by the Admiralty at fifty-two ships in the next ten years, including the five already in hand. The number is not excessive, bearing in mind the volume and vulnerability of that seaborne trade upon which the country is

dependent for its very existence. Whether all these ships should be of the 10,000-ton class or whether a certain proportion of them might be of a smaller, and therefore a cheaper, design cannot be determined until the intentions of other powers are known more fully than at present. With few exceptions, all the cruisers designed abroad since the Washington Conference conform to the maximum limits of tonnage, and probably of armament, permitted by the treaty. If this is henceforth to become the world's standard type, we cannot be satisfied with anything inferior.

Owing to the secrecy in which post-war construction for the Royal Navy is shrouded, it is impossible to know how our designers have approached the formidable task of endowing a ship of 10,000 tons with the manifold requirements of a true ocean cruiser. It has to be remembered that the war duties of a British cruiser may take her to any quarter of the navigable globe. She must not be too dependent on fuel bases, for a ship engaged in commerce protection would be of little value if she had frequently to leave her "beat" in order to replenish bunkers. Great fuel endurance is therefore a *sine qua non*. Her sea speed must not be less than that of the swiftest foreign cruisers, which we may put at 31 knots, despite the higher velocity which some of them have attained when running their trials in light condition, and her armament must be at least as great as theirs in caliber and range. Protection is the most difficult problem of all. In a ship of this general design, the margin of weight left over for armor will be very narrow, and there can be no question of fitting an impenetrable belt. On the other hand, something must be done to protect the vitals from high-explosive shell, which would be deadly against a totally unarmored ship. Most of our present cruisers have a wide belt of three-inch high-tensile steel amidships, reinforced by a one-inch or one and one-half-inch deck over the machinery spaces and the steering gear. Theoretically, this system of protection is useless against any save the smallest projectiles, but in practice, we believe, its efficiency has been demonstrated so far as long-range attack by 6-inch and smaller shell is concerned. Such exiguous armoring, however, would afford no defense against the 8-inch gun, which all navies are now adopting as the standard cruiser weapon. What, then, is to be done, for to abandon armor entirely would be to incur the risk of having the ship disabled by the enemy's first shot? Probably the best compromise would be to dispense with vertical armor and work-in steel decks over magazines, engines, boilers and other sensitive parts. The French are believed to be doing this in their latest ships, and the same procedure is to be followed in the eight American cruisers which are to be laid down as soon as Congress votes the money. Winston Churchill once described a duel between *Dreadnaughts* as "two egg shells striking at each other with hammers." In this particular connection the metaphor was rather forced, but if applied to a combat between any cruisers of the latest type, it would convey no very misleading impression. Limited to a displacement of 10,000 tons, each of these ships, of whatever nation, will carry at least eight 8-inch guns. Their vertical protective plating will be of the lightest, and may be penetrated by a hit at any angle. A large proportion of the internal space will be occupied by machinery and magazines, so that a shell bursting almost anywhere inside the hull would be liable to cause grave injury. The 8-inch gun with which the combatants are to be armed is a weapon of no mean power. Taking as typical the 50-caliber model listed in the Elswick ordnance tables, we find it to discharge a shell of 250 pounds with an initial velocity of 3,000 foot-seconds, and a muzzle energy of 15,600 foot-tons. This gun is capable of firing five rounds per minute. It would probably be effective up to 15,000 yards. Allowing for a somewhat lower rate of fire owing to the circumstances of battle, a ship mounting eight 8-inch guns would be capable of discharging about thirty-two projectiles

a minute, equivalent to a weight of more than three and one-half tons. And, as we have seen, the target exposed to this storm of fire will be exceedingly vulnerable, having no armor capable of resisting the impact of 8-inch shell. In these circumstances, the best, if not the only effective, means of defense would be to deliver a still heavier return fire, in the hope of silencing or destroying the enemy before his guns had inflicted fatal damage. The influence of such reasoning is clearly visible in the design of the eight cruisers projected for the United States Navy. They are to displace 10,000 tons, with engines of 100,000 horsepower for a speed of 33 knots. The main battery will comprise twelve 8-inch guns in four triple turrets, and there will be, in addition, nine automatic guns for use against aircraft. A stout protective deck is to be worked above the magazines, but the sides of the ship will have no armor at all. In view of the relatively immense weight of the guns and mountings, it will hardly be possible to protect them by armor of more than splinter-proof thickness, so that the main armament, like the water-line and perhaps the boilers and engines, will be at the mercy of every direct hit.

While the conception embodies those novel and daring principles which have frequently characterised man-of-war design in the United States, it seems a not irrational method of solving a difficult tactical problem. Provided that stability and seaworthiness do not suffer thereby, the concentration of gun power in these ships will make them redoubtable opponents for any cruiser of equal displacement but lighter armament. If a reasonable degree of protection could be gained by reducing the number of guns, the matter would assume a different aspect, but it is more than doubtful whether the additional armor that could be worked in by sacrificing four guns would have any practical value as a defense against 8-inch attack. At the same time, we should hesitate to recommend this design as suitable for British adoption. There is in the Royal Navy a rooted prejudice against ships which have on paper a fighting power out of all proportion to their displacement, as these American cruisers certainly have. To attain the high speed aimed at, the lines of the hull must be kept very fine, and having regard to the tremendous weight carried on deck, it seems impossible that the ships should be good sea boats and steady gun platforms. Yet, if they rolled heavily and were unable to fight their guns effectively in a seaway, the advantage derived from superior weight of armament would become illusory, and they might fall an easy prey to antagonists carrying fewer guns on a steadier platform. In this connection, it is of interest to learn that the new Italian cruisers, also of 10,000 tons, are to mount eight 8-inch guns instead of the ten pieces with which they were originally credited. This change may be due to calculations having shown that the mounting of the heavier armament would involve an undue sacrifice of other essential qualities. We shall not be surprised to hear of a similar modification of the American design before the ships are actually laid down.

The League and Disarmament

By Sir Herbert Russell, *The Naval and Military Record*, 8 October, 1924. —The plain man may well be pardoned for a general sense of vagueness as to just what the League of Nations has accomplished at Geneva on the subject of henceforth ensuring peace by pacific persuasion. Amid much cheering and hand-clapping the delegates of forty-seven nations accepted a general formula to outlaw war. That is simple enough in itself, but we should like to know just a little more about the formula by which this final formula was arrived at. The word is not very popular in this country today, remembering how it was applied to the preposterous tactics by which an "agreement" with Soviet Russia was sprung upon an astonished nation. For example, Japan

was very persistent in opposition to certain proposals which the league considered vital to its great object. We are told that after long and earnest conference a "formula" was found which she agreed to accept. The idea of perfect harmony on this principle is a little difficult to assimilate. At any rate, it certainly suggests a species of qualification which savours of compromise rather than agreement.

The basic doctrine of the League of Nations' new scheme may be found in the sentence: "A war of aggression constitutes an international crime." In this platitude right-minded people have always concurred. England committed an international crime when she went to war with China to force her to permit the import of opium. It was a "capitalist" campaign in the full Socialistic meaning of the much-hackneyed phrase. I suppose the word "aggression" will be held to apply to any infringement of the "Proctocol for the Pacific Settlement of International Disputes." Briefly, the terms of this Protocol to which forty-seven international delegates have set their signatures, may be summed up as follows:

An understanding to accept the compulsory jurisdiction of the Hague Court on disputes about: (1) The interpretation of a treaty. (2) The question of international law. (3) The existence of any fact which, if established, would constitute a breach of an international obligation; and (4) The nature or extent of the reparation to be made for the breach of an international obligation.

Here we have a clearly-defined code of arbitration. I readily confess that there is something very impressive in the fact that the representatives of forty-seven countries should sign it in the unquestionable conviction that it is a perfectly workable proposal. We may be nearer to the millenium than some of us find ourselves able to believe. Possibly human nature has never been quite so bad as appearances have often suggested. That human nature has suddenly and radically changed is, of course, just about as true as to say that the sun is losing power, hence the atrocious summer of the present year.

But, coming from the academic to the simple prosaic, the item which chiefly interests me among the various details to which the forty-seven delegates have agreed is that representatives of their States shall take part in a disarmament conference at Geneva on June 15, 1925. At the moment of writing, the not unimportant question of the attitude of the United States to this undertaking is undetermined. She will have nothing whatever to do with the League of Nations, except to say that it stands for a very beneficent ideal, and that it is a pity President Woodrow Wilson started it, but President Coolidge is represented as wedded to the doctrine of disarmament. The large and powerful American party who stand pledged to a "hundred per cent Navy" continue to voice their demands in a most dominant note. It is all rather puzzling. Probably another "formula" will have to be found, under which the forty-seven delegates will agree to drop Geneva and all reference to the League of Nations for the time being, and hold their June assembly in Washington.

Meanwhile, it is not unnatural to find that the British Navy is beginning to ask, "Where do we come in?" Only a few days since Lord Parmoor was reported as having offered the British Fleet to the League of Nations, lock, stock, and barrel, in order to ensure the successful working of the peaceful persuasion business. His lordship has since said that he was incorrectly represented, and, of course, we accept his dementi. That, in some shape or form, such an idea was mooted I think we are justified in concluding. An element of doubt as to the complacent amenability of forty-seven separate and distinct races is evidently not absent from the "golden dreams" fostered by the exquisitely-serene environment of the most beautiful lake in Europe.

But how is such a conception to be reconciled with disarmament? That

is the word used in connection with the projected assembly on June 15 of next year. There is no mincing matters; no suggestion of limitation of armaments. "Disarmament"—one need not turn to Webster to learn that this means the total discarding of warlike weapons and the disbanding of the people who have been wicked enough to perfect themselves in the art of using them. And now I come to one of those contradictory conditions which may so well puzzle the plain man. Despite disarmament, "warlike sanctions" are provided for in the program of the league. "The council shall be entitled to receive undertakings from states determining in advance the military, naval, and air forces, which they would be able to bring into action immediately."

Now, if there is one species of information which any country in entering upon a campaign strenuously seeks to keep secret it is the strength she is able to employ immediately. There is something almost Gilbertain in the idea of, say, this country going to the League of Nations and announcing: "They are at their old games again along the Styx frontier. They have committed acts of violence, and the British Ambassador only escaped from Inferno by promising, personally, to assassinate Ramsey MacDonald. His report upon their references to the Hague Court are unprintable. Please may we send two divisions, a battalion of tanks, and two squadrons of fighting planes. We propose to follow this up, etc."

Probably I shall be told that the council does not mean this. To which I respectfully retort. "What does it mean?" I read that, "In the event of a dispute arising, the states agree not to increase their armaments pending peace negotiations by the league." As if this were not enough, it is further provided that "The council of league shall decide on the measures to be taken, etc." Does this mean that they will determine the precise degree of force which either, or both, may employ? If not, again, what does it mean?

I am not so foolish as to criticize or ridicule what forty-seven men of as many nationalities have accepted as feasible. I am merely seeking enlightenment, and I confess that I find very little in this way in the wording of the protocol. There appears to me to be so much comfortable promising of a superhuman acquiescence in the new code. And, at the same time, there is revealed an irrepressible instinct of misgiving in the provision of economic and armed "sanctions." Disarmament and arbitration are the ideals frankly proclaimed; the enforcement of arbitration by "armed sanction" is the big stick in the pacific background.

That to write in this strain is to challenge the impeachment of favoring the "bad old order of things" I am quite conscious. But I deny emphatically that I want to see any more war. In this respect I am absolutely at one with the Geneva enthusiasts, and perhaps even more sincere than a good many of them by the mere circumstance of having seen so much more of the terrible welter than they have. Agreeing in principle, I have yet to be converted to a belief in the new method. We have seen international law, and the usage of civilized warfare, and all this sort of thing long before the League of Nations was thought of. And we have seen what became of all these peace-time codes directly great nations got the grips in a struggle for continued existence. I agree that Nature is very barbarous in many of her precepts; that the law of the survival of the fittest and the law that life can only subsist upon life are simply brutal. But we are taking rather a lot upon ourselves in trying to improve upon Nature, even although it be human nature. Honesty in this world is largely preserved by the police, who deny opportunity for what Sydney Smith called "the luxury of crime." And the police represent in citizen life what the navy and the army stand for in national life.

So far the League of Nations has arrived at a procotol. The tide will flow around the earth a great many times yet before the various states

ratify the signatures of their delegates, which have been tentatively affixed only, not that there can be any disagreement upon the lofty ideal embodied, but there is likely to be prolonged demur to the question of feasibility. Every nation within the membership of the league is asked to take the rest of the world on trust. The Hague Court will sit in judgment upon any disputes. The first principles of nationalism, independence, and dignity are to be abrogated. 'M yes! The Courts of Appeal cannot cope with the work of listening to the contentions of dissatisfied litigants. I fail to see why a nation should differ from an individual in this respect.

All the great organizations of civilized life rest in some sort of idealism, which may usually be defined by the word "service." The British Navy stands for the loftiest ideal in the world—the preservation of peace. It stands for the self-same principle as Geneva, only in a different manner. Oliver Cromwell spoke one of the soundest truths ever uttered when he said, "Put your trust in Providence, but keep your powder dry!" Ramsay MacDonald gets over this sort of wisdom by saying that "our ancestors were foolish." Mr. MacDonald is too modest. The foolishness that has created the greatest Empire the world has ever seen will survive the judgment of a Loissie-mouth schoolmaster.

My own humble belief is that the British Navy need not greatly concern itself as to any prospect of coming dissolution. The League of Nations will endow us with a fresh code of international law—and of very good, beneficent international law. But we shall still keep our powder dry; for those who indulge in "golden dreams" are a very small minority in comparison with those who realize that it is still a vital matter to keep very wide awake in this imperfect world.

Effect of Aircraft on Future Warships

By Captain R. Castex, Baltimore *Sun*, 3 November, 1924.—Toulon, France, October 1.—By your general public and in American naval circles, I understand, the question of whether the effort concentrated in building great battleships should be not considerably reduced in favor of more attention to aviation is now under consideration. Here, then, are our American friends confronted with the same problem which has already provoked many discussions in the Old World.

Indeed in every nation the controversy between partisians of the battleship and aviation is the same. In England we have already had the extreme opinions of Admiral Percy Scott on this subject, and, even more recently, Admiral Kerr and Viscount Curzon have vigorously expressed their opposing views. In France one section of our press daily emphasizes the drawbacks of the battleship and the advantages of aviation, and demands that everything be sacrificed to aeronautics. Now the quarrel has reached your side of the Atlantic.

Let us recognize at the outset that such discussions apply not merely to all peoples but to all periods. They are always raised when a new weapon appears, or even by the rapid perfection of an existing weapon. Thus we have known successive arguments: for the naval ram from 1865 to 1880, for the torpedo boat from 1880 to 1900, for the submarine from 1900 to 1905, for the heavy calibered gun from 1905 to 1914, and for the submarine once more since the late war. And these arguments have always been characterized by propaganda among the public and among naval circles of the four following beliefs: (1) From this time on the new weapon will establish unquestioned superiority for itself; (2) the new weapon will displace the old; (3) the new weapon will forward defensive strategy or tactics; (4) all should be sacrificed to the development of the new weapon.

Precisely this chain of ideas is now manifested with regard to aviation. There is nothing new under the sun.

Let us note, however, that the more determined partisans of the new weapon generally forget that in war it is necessary to reckon with the will of the enemy. That enemy is not going passively to await onslaughts from a novel arm of warfare. He will seek to parry and to thrust back. He will invent on his own account devices equally novel, and the miraculous results that were hoped for from our own invention will find themselves somewhat compromised. Just that is happening, or will happen, for aviation.

After having at first awaited with resignation whatever the aviators desired to send us from the heavens, we are beginning to react. Warships are being armed with anti-aircraft guns. This system of defense is still in its infancy, but it can be foreseen that it will shortly be very highly developed. When capital ships have for their anti-aircraft equipment some ten cannon of medium caliber, with control of aim centralized by the fire director, they will certainly be less approachable than at present. During the last war it was in this fashion that certain points on the enemy front were defended in such a way that the aviators hesitated to annoy them. Moreover, it must not be forgotten that the aerial bombardment of a battleship demands very precise aim and definite weather conditions. There is nothing in common with the bombing of a city.

And then the enemy, too, will have his aviation fleet. Without doubt it will greatly obstruct the assailants, who will not have the uncontested field that it imagined.

For all these reasons I believe that events will turn out quite differently in wartime from the assumption of peacetime, and I fear that the experiments made last year with the battleships *New Jersey* and *Virginia* have distorted our views somewhat.

Moreover, the general possibilities of aviation are still too limited for one to anticipate the time when armed forces will be completely constituted in that way. Aviation can hinder utilization of the sea by an adversary, but cannot, by itself alone, insure to the fleet of its side the mastery of the sea and the freedom of maritime communication. Nor can the aviator, left to his own devices, insure either the defense or the conquest of territory. His effects are too transient. He lacks the continuity of action and that permanent occupation of the theater of conflict which are the characteristics of other military agencies on land or sea.

But it is even more interesting to note that aviation is not only unable to dispense with other arms, but even demands their presence. For example, if one wishes to utilize airplanes for something more than coastwise operations, it becomes necessary to embark them on aircraft carriers. Then the enemy will hasten to attack these craft with surface units—destroyers, for instance. To this the whole-souled partisans of aviation reply that the carriers can be defended by destroyers. The enemy, unwilling to have the worst of it, will support his destroyers with cruisers, to which one will be forced to oppose other cruisers. Finally, we shall see battleships intervening to protect the aircraft carriers—that is to say, to protect aviation, which had thought itself able to dispense with them.

The same thing applies in a major action. The aviators will attack with much more facility during a big gun bombardment, because the enemy's anti-aircraft guns will be at that time hindered or even neutralized by the fire of their own ships, and because the enemy will be so much occupied that he will not be able to maneuver to oppose aerial attack, so that to operate successfully the aviator needs the support of the guns of surface craft. We have already come to this conclusion for the torpedo boat and the submarine, as on land for the relations between infantry and artillery.

On the other hand, gunfire will find itself well supplemented by the assistance which the aviator brings it, not merely because he forwards range-finding and impedes the enemy's fire regulation, but also because he can get

to work simultaneously with the powerful means of attack, and it is clear that decisive effects will be obtained much sooner if to artillery fire is added, at the point permitted by the enemy disposition, the attacks of submarines, torpedo craft and airplanes.

The aviator needs the big gun; the big gun needs the aviator. Is this a novelty? Not in the least. It is the old rule of the *liaison des armes,* which in a new invention is verified once more.

So that, as the outcome of a little reflection, one reaches, as in the past for the naval ram, the torpedo boat and the submarine, an opinion on the question resolved into principles diametrically opposed to the impressions given by our first summary. These are as follows. (1) The new weapon will not reign as an exclusive mistress in the military domain; (2) the new weapon will not result in the elimination of the old ones, but is merely added to them; (3) the new weapon achieves its full effect only in an intimate liaison with other arms; (4) it is necessary to make necessary sacrifices for the new weapon, but without neglecting the old ones on that account.

I am, then, of the opinion that aviation will not displace the capital ship, or at least the surface warship designed for gunfire combats. But none the less firmly I believe that the new weapon will have very important effects on the construction, the protection and even the tonnage of this type of ship.

The development of aviation, coinciding with that of the submarine, augments in considerable proportion the risks which menace the battleship of the line. Evidently they will have to be protected with armored superstructure, with bulging hulls to turn torpedoes, with many other ingenious dispositions. Thus one may be able to prevent the battleship's destruction, but not serious injuries entailing repairs and long periods when the big ship will be out of action. Under these circumstances, it may be asked if the best means of diminishing these new risks is not to curtail tonnage so as to expose a smaller area to a lucky blow, or, in other terms, to increase numbers at the expense of individual tonnage. Armament development has on land followed analogous tactics of dispersion. It is a consideration which on sea would limit individual battleship tonnage much more effectively than the Washington Conference. Considering future risks, 35,000 tons is far too high a figure for a battleship, especially for the modest fleets, which can have only a very small number of these great ships.

To sum up, my personal opinion is that a navy careful of its interests should, in proportion to its means, make all possible sacrifices in behalf of aviation, but without neglecting its surface craft; that the tonnage of the latter should be scaled down rather than up, and finally that every agency should act in complete harmony if a happy result is desired.

World-Wide Activity in Naval Construction

By Hector C. Bywater, Baltimore *Sun,* 28 October, 1924.—London, September 30.—The decision reached by the League of Nations to hold an arms parley at Geneva next June coincides with a marked revival of naval activity in Europe. Although the conference, if it meets at all—and this is far from certain—will have to deal primarily with armies and air fleets, it cannot afford to neglect the steady if unobtrusive expansion of marine armaments in the Old World.

While the council of the league was arranging its projected conference, a few weeks ago, important changes were taking place in the general situation at sea. Great Britain had begun to put into effect the new policy of concentrating a great fleet in the Mediterranean; France was making ready to augment her force in those waters with new construction, and Italy drove the first rivets into the ships of her postwar program. And now comes news from Russia and Turkey of ambitious plans for the development of their

respective navies. It looks as if the political uses of a strong fleet had suddenly become evident to several powers—Britain not among them—which previously had discounted the value of this factor.

The surprising thing is, not that France should now be striving to regain her former position as a naval state of the first rank, but that she should ever have relinquished it. Her history is in one sense a record of aims and aspirations frustrated by inability to hold her own at sea. But now, as never before, naval strength has become absolutely indispensable to her.

In bygone days the navy of France was an instrument by which, had it been equal to its task, she might have founded the greatest empire on earth. Could they but speak, Louis XIV and Napoleon would be the first to concede as much. Until recently most Frenchmen looked upon their navy as a vehicle for the transmission of their military power beyond the confines of *la Patrie*. Today they recognize it as a vital item in their scheme of home defense. The French Army of the future, the army destined, as they believe, to hold the frontiers against the vengeful hordes of the Huns, will consist in large measure of colored troops from Northern Africa and the more distant Senegal.

It is easy for foreigners to rebuke France for relying upon these black levies to make good her deficit in white soldiers. But Frenchmen are realists. To their credit be it said, they face the inexorable logic of circumstances more stoutly than the Anglo-Saxon ever does. They know that the population of Germany will eventually outnumber that of France by two to one; they know also that, however much war may become mechanicalized, man power is and will always remain the decisive element in war.

To them, therefore, the most urgent problem is how to insure the presence on French soil of those colored warriors whenever they are needed. They can only be brought by sea; and so it follows that a navy powerful enough to guarantee the safe transit to Europe of their dark-skinned allies is regarded by all good Freshmen as an absolute necessity. This explains why France is now devoting so much energy to the improvement of her long-neglected naval forces.

Nor will she easily be persuaded to cut down her program, seeing that the new ships are intended to safeguard the routes to Africa. On the question of security M. Herriot is as adamant as M. Poincaré, and since security cannot be attained without adequate naval strength, every proposal for a drastic reduction of the fleet is certain to be resisted as firmly as if a big cut in the military establishment were in question.

The scheme of construction adopted two years ago is already bearing fruit. In the next six months France will put into service nineteen new fighting craft. These are: The fast cruisers *Lamotte-Piquet* and *Duguay-Trouin*, of 8,000 tons apiece, with a designed speed of 35 knots and a main battery of eight 6.1-inch guns in turrets; three scouts or flotilla leaders, of 2,400 tons and 36 knots, armed with five guns of 5.1-inch caliber—a battery of extraordinary weight for ships of this tonnage; eight large destroyers, with a speed of 33 knots; and six ocean-going submarines, with a cruising endurance of 7,000 miles.

This array of high-speed surface craft and submarines represents but the first installment of a veritable fleet of new ships which are due to be commissioned between now and 1931. The two cruisers named above will shortly be followed by the *Primauguet*, of the same class. Next will come six larger vessels of 10,000 tons and a battery of eight 8-inch guns, two of which are already on the stocks. New scouts and destroyers to the number of fifty-seven are building and authorized, together with fifty-one submarines, ranging from 3,000-ton diving cruisers to undersea mine layers.

By the time all these new vessels are in service France expects to have available an immense force of naval aircraft. With these resources at their

back, her sailors anticipate no difficulty in closing the gates of the Mediterranean against any hostile power, however formidable it may be. It would be impossible, they claim, for enemy dreadnaughts or cruisers to live in waters infested with torpedo-craft of every description—surface, submarine and aerial.

The weakness of their battle fleet causes them no concern, believing as they do that big ships are useless for war operations in the circumscribed area of the Middle Sea, whatever value they may yet possess for oceanic warfare.

Italy, too, makes steady progress with the rebuilding of her fleet. One of the first executive acts of Signor Mussolini was to approve a program of new construction, which is now well under way. The keels of two cruisers were laid some time ago. These vessels, the *Trieste* and *Trento*, will displace 10,000 tons and the battery of each vessel is to consist of ten 8-inch guns in two triple and two double turrets.

To mount an armament of this power it will be necessary to sacrifice sea-worthiness and endurance, but the general design of the ships indicates that they are building mainly with a view to service in the Mediterranean. Three additional cruisers of the same power will be laid down in the near future.

Other war vessels now constructing in Italy are: Eight destroyers—*Borea, Espero, Ostro, Zeffiro, Aquilone, Turbine, Euro, Nembo*—of 1,355 tons and 36 knots speed; six submarines—*Giovanni Bausan, Marcantonio Colonna, Vetter Pisani, Pier Capponi, Giovanni Procida, Massaniello*—of 780 to 805 tons, and six mine layers. By the end of the year Italy's force of airplanes for naval duty will have reached the imposing total of 1,900 machines.

There, as in France, the battleship has fallen into discredit. One suspects, however, that in both cases it is more a question of finance than of positive conviction as to the demise of the dreadnaught. Either in France or Italy the price of a new battleship would exceed $40,000,000 and, having regard to the special stragetic requirements of each country, this sum would probably be spent to greater profit on cheaper weapons, such as the submarine and the airplane.

For many years previous to the war the Turkish Navy had been omitted from all calculations of relative power at sea. Its ships were obsolete, its officers and men untrained and most of the money voted for its upkeep stuck to the palms of venal officials. But the Nationalist Government at Angora is hopeful of changing all this. It holds that the new Turkey, to be in the fashion, must have a real navy, and to this end it has already drawn up a scheme of which the following are the main points:

(a) The appointment of a foreign naval mission, preferably Japanese, to supervise the reorganization of the Turkish fleet.

(b) Repair the battle cruiser *Yavouz Sultan Selim*—ex-*Goeben*.

(c) Recondition and rearm the cruiser *Hamidieh*, seven gunboats, six torpedo boats and two submarines.

(d) Order from builders in Britain, France, Germany and Italy two battleships, to be named *Mustapha Kemel* and *Dojoumhouriete;* two 10,000-ton and two 7,500-ton cruisers, three scouts, twelve destroyers, four submarines and six mine layers.

Provision is also to be made for modernizing the naval schools, founding aviation bases at stragetic points and reorganizing the central navy office and staff on up-to-date lines. Whether this scheme will ever get beyond the paper stage is doubtful. The new ships alone would cost more money than the Angora treasure chest holds at this moment or is likely to hold for years to come. Still, the vision of a Turkish fleet, comprising ships of the latest type and trained by Japanese officers, is distinctly intriguing, if a little fantastic.

Stories of an impending renaissance of Russian naval power have been freely put about in the past four years, but nothing seems to have come of them so far. Some excitement was caused a few months ago by the announcement that a new Russian cruiser of powerful type, named the *Vorovsky*, would call at Plymouth on its way to Vladivostok. When the ship arrived she was found to be merely a converted yacht—the late James Gordon Bennett's *Lysistrata*—armed with a couple of popguns.

Accordingly, even the circumstantial account of a big Russian program which appears this month in the Russian paper *Segodnia* must be accepted with reserve. For the Baltic fleet, says this journal, two cruisers of 3,000 tons and 23 knots, carrying 6-inch guns; four 1,400-ton destroyers of 36 knots; seven submarines and a flotilla of anti-submarine gunboats are to be built. The force in the Black Sea is to receive one cruiser, eight destroyers and twelve anti-submarine craft. Finally, six new gunboats are to be constructed for the Far Eastern station. For the execution of this program, which was drafted jointly by German engineers and the Russian designer, Kryloff, the Soviet has set aside a credit of 50,000,000 gold rubles ($25,000,000). But in their present dilapidated state the Russian arsenals would probably be unable to build and equip even a fleet of these dimensions.

In addition to the various projects outlined above, several other powers are at work upon, or have in contemplation, important building programs, such as the United States, Japan and Spain—to say nothing of Sweden, Norway, Finland, Greece and South American republics, all of which are preparing to expand their combatant fleets. Clearly, therefore, there is scope for a further limitation of naval armament, though here it is gravely doubted whether the League of Nations is competent to effect it.

CURRENT NAVAL AND PROFESSIONAL PAPERS

"Leadership," by Brigadier General Harry A. Smith, U. S. Army. *The Coast Artillery Journal*, October, 1924.

"Leadership," by Major General Eli A. Helmick, U. S. A. *Infantry Journal*, November, 1924.

"Ex-Kaiser Wilhelm II Breaks His Silence." *Current History*, November, 1924.

"The Vacuum—There's Something In It," by W. R. Whitney, Director Research Laboratory, General Electric Company. *The Tech Engineering News*, October, 1924.

"The Transmission of Photographs by Radio," by C. Francis Jenkins, president Jenkins Laboratories, Washington, D. C. *The Tech Engineering News*, October, 1924.

"Loading the Boilers to Obtain Maximum Efficiency," by Charles E. Colburn. *Power*, October 21, 1924.

NOTES ON INTERNATIONAL AFFAIRS

FROM OCTOBER 23 TO NOVEMBER 23

PREPARED BY

PROFESSOR ALLAN WESTCOTT, U. S. NAVAL ACADEMY

GREAT BRITAIN

RESULTS OF OCTOBER ELECTION.—The British parliamentary elections held on October 29 resulted in a sweeping victory for the Conservative party. With 606 out of 615 seats filled, the figures were as follows:

Conservatives	408
Labor	150
Liberals	37
Others	11

The Labor party lost forty-one seats, and the Liberals 112, the latter, in fact, passing at least temporarily out of existence as a major party. In spite of their decreased representation, the Labor party polled about a million more votes than in the election preceding.

The MacDonald Ministry resigned on November 4, and Stanley Baldwin, as leader of the Conservative party, became Prime Minister. His cabinet, as announced on November 6, numbered nineteen, of whom twelve were in his former cabinet. The greatest surprise was the appointment of Winston Churchill, former Liberal, as Chancellor of the Exchequer. T. Austen Chamberlain was made Foreign Secretary, and William Clive Bridgeman, First Lord of the Admiralty.

RUSSIAN TREATIES CANCELED.—The results of the British election were interpreted as, in part, an overwhelming expression of disapproval of the treaties with Russia negotiated by the MacDonald Government. On November 21 Foreign Minister Chamberlain sent a brief note to M. Rakovsky, Soviet Chargé d'Affaires in London, declaring that the new government, after due deliberation, was "unable to recommend the treaties in question to the consideration of Parliament, or to submit them to the King for His Majesty's ratification."

In view of this action, the question was even raised in the press whether the government had not, in effect, withdrawn the *de jure* recognition accorded to Russia by the previous ministry.

RUSSIAN PROPAGANDA DENOUNCED.—On October 24, previous to the election, the MacDonald Government sent a sharp note of protest to Russia

against Soviet propaganda, citing as evidence a letter, dated September 15, alleged to have been written by M. Zinoviev as head of the Communist Third International to the British Communist party, and holding the Soviet Government responsible for this action of the International.

In reply the Soviet representative in London declared the letter a forgery (apparently without waiting for information from Moscow). This note the MacDonald Government refused to receive as a proper diplomatic communication.

On November 21, at the time of the cancellation of the Russian treaties, the British Foreign Office sent a second note reiterating belief in the authenticity of the Zinoviev letter, and citing other evidence of constant and open propaganda by the head of the Third International, with the knowledge and consent of the Soviet Government, in spite of the latter's solemn undertaking. The note quoted and endorsed Mr. MacDonald's statement in the previous protest, that "no government would ever tolerate an arrangement with a foreign government by which the latter is in formal diplomatic relations of a correct kind while at the same time a propagandist body, organically connected with that foreign government, encourages and even orders the subjects of the former to plot and plan revolutions for its overthrow."

BRITISH DEMANDS TO EGYPT.—Following the assassination of Major General Sir Lee Slack, Governor General of the Sudan and Sirdar of the Egyptian Army, the British Government through Lord Allenby as High Commissioner in Egypt presented what was practically a twenty-four hour ultimatum to the Egyptian Government calling for an apology, prosecution and punishment of the criminals, suppression of political demonstrations in future, payment of £500,000, withdrawal at once of all Egyptian officers and troops from the Sudan and no further opposition to British policies for the protection of foreign interests in Egypt. It was further stated that the irrigation area at Gezira on the upper Nile would be increased at the expense of territory below.

Orders were issued for the dispatch of further British forces to Egypt.

LEAGUE OF NATIONS

LEAGUE COUNCIL ACTS ON IRAK DISPUTE.—The dispute between Great Britain and Turkey over the frontier of the Kingdom of Irak (British mandate) in the Mosul area was submitted to the Council of the League of Nations at a special session in Brussels at the close of October, and settled by a decision which accorded Turkey possession of a strip about forty miles long by twelve miles broad on the northern side of Mosul, but did not require the British to surrender any prospective oil lands, pending subsequent determination of the frontier by a neutral commission of three members. Both parties accepted the decision.

At the same time the Council took up a dispute between Greece and Turkey over the arrest of Greeks in Constantinople who, it was alleged, should be allowed to remain there as established in residence before 1918. The

matter was settled by acceptance by both Greek and Turkish representatives of a report drawn up by a committee headed by Viscount Ishii. The report expressed appreciation of the fact that both Greece and Turkey had recognized the plenary authority of the mixed commission (four Greeks, four Turks, and three neutrals) established to supervise the exchange of populations, and pointed out that future juridical questions could be referred to the World Court. A report from both governments on treatment of minorities was requested for presentation at the meeting of the Council on December 8.

PEACE PROTOCOL OMITTED FROM LEAGUE COUNCIL AGENDA.—It was announced on November 18, that, at the request of the British Government, consideration of the Geneva Peace Protocol would be omitted from the agenda of the League Council meeting at Rome on December 8. It had originally been planned that a committee of jurists should be appointed to draft changes in the League Covenant made necessary by the protocol.

The British request was at first taken as indicating the purpose of the Baldwin Ministry to "scrap the protocol." Semi-official explanations were made, however, to the effect that delay was necessary before the new Ministry could determine its policy; and that if modifications or reservations were proposed, an effort would still be made to satisfy the desire of France for security.

FRANCE

RECOGNITION OF RUSSIA.—Notes exchanged between the French and Russian Governments renewing diplomatic relations, were made public on October 29. In France criticism of this step on the part of the Herriot Government was in general reserved, pending the results of future negotiations over commerce and debts. It was announced that Leonid Krassin would be Soviet representative in Paris, and that Jean Herbette, former foreign editor of the *Temps*, would go to Moscow.

GERMANY AND AUSTRIA

ELECTIONS SET FOR DECEMBER 7.—Elections throughout Germany for the Reichstag as well as for the Prussian and Bavarian legislatures, were set for December 7. The campaign developed into a hot contest between the *Schwarzweisrot* (black, white and red) of the old empire and the *Schwarzrotgeld* of the republic: i.e., beween monarchist and reactionary elements and the supporters of the present régime. The Nationalists were themselves not wholly united in their opposition to the policy of the Marx Government, as shown by the fact that last August forty-eight voted in favor of, to fifty-two against, the laws putting into effect the Dawes Plan.

NEW AUSTRIAN MINISTRY.—After reconsidering a resignation shortly previous, Dr. Ignaz Seipel, Chancellor of Austria, on November 18 made his final decision to give up office. His resignation was due partly to ill health and partly to opposition to his policy of centralization of government

power, especially in matters of finance. His successor, Dr. Rudolf Ranek, favors more autonomy for the provinces included in the republic. Commissioner Zimmerman, who remains as League financial representative, expressed the belief that the change of ministry would have no serious effect on Austrian finances.

SOUTHERN EUROPE

OPPOSITION TO MUSSOLINI IN ITALY.—Shortly after the opening of Parliament in Italy in November, Premier Mussolini was given a vote of confidence on his foreign policies of 315 to 6, and on internal policies, 337 to 17. This very favorable result came about, however, from the fact that about one third of the deputies, comprising the opposition, remained absent; and it was feared for a time that the 300 or more votes necessary for a quorum would not be secured. Premier Mussolini's attitude in the preliminary debates was more conciliatory than ever before. The opposition, in a manifesto issued before the opening of Parliament, declared that Fascism had obliged Italy, during her efforts to recover from the war, to concentrate all her energies in a fight for public and private liberties.

LIBERAL AGITATION IN SPAIN.—At Madrid a meeting on October 28 of political leaders in opposition to the dictatorship of Primo de Rivera ended in wholesale arrests of prominent chiefs, including General Berenger, former Governor of Morocco. On November 6 there was street fighting in Barcelona, and subsequently two of those arrested were put to death and thirty-six were held for military trial. It was believed that the government had forestalled a widespread plot for a republican uprising.

MOROCCO REBELS DEFIANT.—Spanish efforts to come to terms with the rebels in Morocco ended in failure at the close of November, when the rebels demanded payment of $3,000,000,000; delivery of twelve airplanes, a battery of artillery, and 10,000 rifles; and evacuation by Spain of all occupied territory beyond the fortifications of Ceuta and Melilla. It was believed, however, that Spain must accept these terms, unless Great Britain and France should intervene to bring about a more favorable settlement.

By an agreement with France thirteen years ago Spain came into possession of a territory of about 10,000 square miles along the coast, but since that time has been in almost constant warfare with the native tribes, at a cost of approximately $400,000,000.

UNITED STATES

DEBT AGREEMENT WITH POLAND.—From New York *Times* of November 15.—Washington, November 14.—An agreement was reached today by the Treasury Department and representatives of the Polish Government for the funding of the Polish debt of $178,560,000. It is along the same lines as the agreement reached with Great Britain. Secretary Mellon acted for the United States and Dr. Wladislaw Wroblewski, the Polish Minister, for his government. The agreement was approved by President Coolidge and will be submitted to Congress and the President and the Council of Ministers of Poland.

The debt includes bills for flour, Shipping Board services, surplus war stores and famine relief supplies.

This agreement is the fifth funding accomplished by the World War Foreign Debt Commission since its creation in February, 1922. Previous ones concluded and approved by Congress were those with Great Britain, Finland and Hungary. The one reached with Lithuania on September 24 will be submitted to Congress at the coming session.

Minister Wroblewski, in commenting on the funding agreement, characterized it as essential to the rehabilitation of Poland, and pointed with pride to the fact that Poland balanced the budget this year and stabilized her currency.

MEXICO

JAPANESE FISHING RIGHTS CANCELED.—From New York *Times*, November 16.—Mexicali, Lower California, Mexico, November 15.—Governor Adelardo Rodriguez, of the northern district of Lower California, announced here today that he had canceled all of the extensive fishing concessions held by Japanese on the coasts of Lower California.

The Governor explained his action by the statement that the Japanese had violated the terms of the concessions, which now will be turned over to Mexican interests and the fish shipments diverted from Japan to other parts of Mexico and to the United States.

The principal Japanese interests in the fishing business of Gulf of California waters and on the Pacific Coast of Lower California are headed by C. Kondo, who, it is reported, will appeal from the Governor's action to Federal authorities at Mexico City.

The concessions involved covered all fishing rights on the two coasts of the northern district of Lower California and had been extensively operated by the Japanese for a number of years.

Mexican organizations which will take over the business, have announced plans for the building of a number of fish packing houses south of Ensenada, Governor Rodriguez said.

Governor Rodriguez recently announced himself as a foe to Japanese colonization projects in Lower California. Replying to a Mexican delegation which protested to him on the occasion of a visit by a group of Japanese to Lower California, he declared he would invoke Federal laws to prevent Nipponese from colonizing territory within his jurisdiction.

COMPLETE BREAK WITH GREAT BRITAIN.—On October 25 the Mexican Government announced the withdrawal of all Mexican consular officials from Great Britain and complete severance of diplomatic relations. Negotiations between Great Britain and Mexico broke down last spring, and Great Britain ended diplomatic relations after the murder of Mrs. Evans, widow of a British subject, on her Mexican ranch.

On November 16 two Mexicans found guilty in the Evans murder case were sentenced to death by the Mexican courts. The Mexican Government charged the British agent with attempts to bribe witnesses in this case.

FAR EAST

OPIUM CONFERENCE AT GENEVA.—An International Opium Conference was held at Geneva during the last two weeks of November. Prior to the general conference, there were several preliminary meetings, during which the Japanese delegates created a sensation by declaring that Japan was dis-

criminated against by other powers in regard to imports of opium. The British delegates had previously referred to scandals in connection with the issue of import permits by the Japanese Government, and had stated that opium and other drugs were diverted on their way to the country of purchase and forwarded to other nations for illicit gain, thus making special investigation of import certificates necessary. Japan resented this as a reflection upon her honor.

In the general conference which followed American delegates took an active part, in an endeavor to extend the conference agenda to all aspects of the opium and narcotic drug evil.

CHINESE CIVIL WAR.—The confused warfare in China took a new turn on October 23, when it was reported that General Feng Yu-hsiang, the "Christian General" and Eleventh Division Commander, supposedly 100 miles northeast of Peking, had reentered the capital, forced the resignation of President Tsao Kun, declared a cessation of hostilities, and set up a new provisional government. General Wu Pei-fu, up to this time the chief power in Peking and in command of the army on the Manchurian frontier, returned toward Peking with a part of his forces, but was soon obliged to surrender and go aboard a vessel of the Chinese Navy (which remained loyal) at Tientsin. General Feng occupied Tientsin on November 3.

The new government invited General Tuan Chi-jiu to assume control, and it was expected that this old Anfu leader would ultimately dominate whatever government was finally set up, which would undoubtedly be strongly under Japanese influence, with possibility of unification more distant than at any time since the monarchy.

BOOK REVIEWS

BLOCKADE AND SEA POWER—The Blockade, 1914-19, and its Significance for a World State. By Maurice Parmelee, Ph.D. New York: Thomas G. Crowell Company, 1924. Octavo, 460 pages. $3.00.

REVIEWED BY REAR ADMIRAL RICHARD WAINWRIGHT, U. S. NAVY, RET.

In his preface the author, speaking of the World War, says: "Historians will be gathering the necessary facts for many decades. Now is the time to furnish them all of the available information for a dispassionate account." In Part I he furnishes many valuable facts for the future historians and for naval officers in regard to this remarkable blockade of the Central Powers by the Allied and Associate Nations. He is well equipped to supply these facts as he was one of the representatives of the United States War Trade Board in London, a member of the American delegation to the Allied Blockade Committee and the American delegate to the Allied Rationing and Statistical Committee. He visited Germany and Austria in order to study the effects of the blockade and afterwards was detailed to Berlin to report on economic conditions in Germany. While he has made good use of his opportunities, however, in his efforts "to be scrupulously fair to both groups of belligerents" he has not fully shown the unscrupulous injuries inflicted on neutrals by both groups; and he offsets the inhuman acts of Germany by the injuries inflicted on the people of the Central Powers by the blockade . . . "in this book I have shown that the recent blockade was a wholesale attempt to starve several nations, as barbarous in its nature as the other phases of this inhuman and bestial European War." This inability to see the difference between the injuries inflicted by war, as conducted by the Allies following the Geneva Conventions, and war as conducted by the Germans, ignoring all conventions and humane rules, was to be expected from a confessed internationalist.

In his second chapter he gives an account of the Declaration of London, and says: "It will doubtless be improved upon in the future, especially in view of the lessons to be learned from the European War. But it is unquestionably the best and most authoritative statement of international law concerning blockade up to the present time." This statement is incorrect as naval opinion in the United States was unfavorable to the Declaration of London, although not sufficiently strong to prevent its ratification; but in Great Britain naval opinion prevailed and parliament refused to ratify the declaration. Moreover, while Great Britain, after repeated pressure from the United States at the beginning of the war, did adopt the Declaration of

London, with reservations, as experience was gained in the war it was found necessary to make new reservations until finally all adherence to the Declaration of London was withdrawn and it was declared that Great Britain and her allies would be bound by the rules of international law as established prior to the London Convention. The declaration was the result of a series of compromises and not a statement of the rules as established by the decisions of prize courts, and its rules served greatly to restrict the power of a superior fleet.

In the following chapters of Part I, the author shows how the generally accepted laws of war were expanded until "the longer this game was continued the more reckless and unprincipled did both sides become, and by the end of the war few vestiges of international law remained in operation in the practice and policies of both groups of belligerents." The right of visitation and search was extended to mean seizure, search and detention, and release without trial. The doctrine of continuous voyage was expanded beyond the question of final destination to the question of possible substitutes. Commodities were subject to seizure that might be used as substitutes by the neutral to replace other commodities shipped to enemy countries. A close blockade became a virtual blockade off neutral coasts. Finally, the neutral was subjected to a system of rationing that prevented nearly all shipments to the Central Powers, and in answer to our many objections to the invasion of neutral rights Great Britain replied: "It would seem to be a fair reply to such a contention that new devices for dispatching goods to the enemy must be met by new methods of applying the fundamental and acknowledged principle of the right to intercept such trade."* Thus the right of neutrals to trade with an enemy under certain restrictions was swept away.

The author also shows the various committees formed to carry out the measures necessary to make the blockade effective, the allied agreements with neutral countries, the pressure exerted on neutrals to force these agreements, and the effect and military success of the allied blockade. One of the reasons for the failure of the blockade to be a complete success, not mentioned by Mr. Parmelee, may be found in the protests from our State Department and in the revelations of the British Naval Attaché to Sweden. He shows how large supplies reached Germany from England through Sweden, of the very commodities that neutrals were prevented from sending to Sweden, causing the reasonable suspicion to arise that an improper use was made of the seizure of the papers and detention of neutral vessels.

Many statistics are given that serve to show the serious effect of the blockade on the Central Powers and the great advantage of superior sea power.

Part II takes up historical incidents to show the evil uses to which sea power has been put. It contains a brilliant review of the League of Nations and the author's plan for a World State that is to bring peace on earth,

* Also: "The measures taken by the Allies are aimed at preventing commodities of any kind from reaching or leaving German ports."

if adopted with the coercive measures necessary to prevent war. The chapters of Part II are permeated with pacifism and internationalism. The author speaks of the writer of *Sea Power*, as "the notorious Admiral Mahan." He decries all armament because it has been used to abet tyranny, just as a Red would do away with the police force because some innocent men had been beaten up by brutal policemen.

Speaking of the dangers of rivalry, Mr. Parmelee says: "Since the termination of the European War is to be observed a similar effect of the even greater British postwar navy upon the naval program and ambitions of the United States." Yet since this war we have had the Washington Conference, the first great step toward general peace by the limitation of naval armaments and now great American battleships, partially completed, are being destroyed. It is a pity that Mr. Parmelee has not used his extensive knowledge of facts and great ability as a writer in the cause of rational limitation of armaments rather than to advocate the abolition of all arms. Peace is the aim of all sound thinkers; but while the majority believe in the slow evolution toward better things, the idealist, the pacifist and the internationalist would use revolutionary methods that could only serve to retard if not to destroy present progress. They would hustle aside the natural laws as decreed by a higher power in favor of their own intellectual fantasies.

The author's World State is one of these fantasies. As armaments are used in war, away with armaments—this in spite of the example of China. The so-called capitalistic scheme of government produces rivalry and competition, away with capitalism, try socialism even communism—this in spite of the evil plight of Russia. He installs a World Parliament where a war of words will soon lead to a war of arms, and as all the present barriers are to be swept away, barbarous war will follow.

Blockade and Sea Power is well worth reading. The facts are valuable and the fancies will injure no one. The majority of thinking Americans believe in helping Europe in peace, but remaining aloof from her wars. The advocates of the League of Nations will not like his exposition of its faults and the fanatic fringe that Colonel Roosevelt says accompanies all reforms cannot be imposed by his theories. Universal peace is a beautiful ideal but humanity improves slowly and it must be many years before the lamb can lie down alongside, and not inside, the lion.

MEMOIRS OF THOMAS O. SELFRIDGE, JR., REAR ADMIRAL U. S. NAVY. New York: G. P. Putnam's Sons. 1924. $2.50.

REVIEWED BY REAR ADMIRAL C. F. GOODRICH, U. S. NAVY, RET.

After reading this unusually interesting book, the reviewer laid it down, wishing, for the thousandth time, that more of our old officers had committed their memories to writing for the benefit of their successors and as a powerful means of educating the American people in appreciation of

the Navy's splendid work in peace as well as in war. Too often the latter fail to realize that they are the Navy's owners and, alone, are at fault if it is allowed to lapse into inadequacy or inefficiency. They are prompt to blame it in disaster but averse to admitting their own responsibility for keeping it always prepared for any emergency. Hence Admiral Selfridge's autobiography is especially timely.

The author of these enjoyable reminiscences inherited his name and love of the sea from his father, who was a distinguished naval officer. His father reached the head of the retired list. The son tarried long next to it, after a most useful and eminently creditable career afloat and ashore beginning, in 1851, as number one of the first class to be graduated at Annapolis under the then new system of a four years' course at that institution. With just pride he claimed to "being the pioneer graduate of the U. S. Naval Academy."

The reader (and it is hoped that every graduate may be so designated) will note that, when less than twenty years old, even at night, he had charge of the deck of the razee *Independence* and a watch of about two hundred fifty men. The reviewer holds firmly to the belief that the earlier responsibility is put upon a man the better it is for him and the reviewer deprecates the present system of graduation at too advanced an age. May it not be that Selfridge's youthful assumption of responsibility was no small factor in his achievement during the Civil War, when surveying the Isthmus of Darien, and as commanding officer?

Bearing on this point, read his account, when captain of the *Nipsic* in 1868, of forcing the Spanish authorities at Trinidad, Cuba, to clear an American barque, illegally held by the local Collector of Customs, threatening to take possession of the Customs House and tow the vessel out of port. Such an action required backbone, a quality with which Selfridge was abundantly endowed.

Again, ten years later, he was sent to survey the Madeira River, that great tributary of the Amazon, whose waters were barred to foreign shipping unless specifically permitted. On arriving at his scene of operations he found that the necessary permit, promised him in Washington, had not been issued. Did this deter him? Not in the least. He blandly remarks: "I concluded to take the bull by the horns and go ahead with the work, leaving it to my superiors to explain." Surely a praiseworthy spirit. His course was approved by his own government and also by that of Brazil.

Had he possessed the power in 1861, he would, unquestionably, have evacuated the Norfolk Navy Yard in time and have removed the ships there (subsequently burnt) and have saved the *Merrimac* which, later, under the Confederate flag, destroyed the *Congress* and his own frigate the *Cumberland*. His plan was rejected, presumably on the score of his youthful rashness!

His chapter, *Cumberland* and *Merrimac*, is a graphic report of that one sided but gallant fight in which the *Cumberland* went down with colors flying. No less thrilling is his story, as an eye-witness, of the epoch-making

battle between the *Monitor* and the *Merrimac*. For a short four or five days he held the command of the former in succession to the wounded Worden. A fine example of service loyalty he set in his reception of the officer sent by the Navy Department to relieve him. As "Lieutenant Jeffers was many years the senior, I could have no objection to his superseding me" although, inadvertently, the *Monitor* had been given to him by Mr. Fox, the Assistant Secretary, whose embarrassment he so promptly and courteously dispelled.

From the standpoint of today's knowledge, his brief experience on board the *Alligator*, a submarine propelled by man power, seems vastly amusing. With her sinking, there was ushered in a period of active, exciting and well performed war duty on the Mississippi. His professional merits and energy were recognized in the command of the powerful, ironclad gun boat *Cairo* which did excellent service until sunk by a "torpedo" (or mine as it is now called). Being too good an officer to keep unemployed or on shore, Admiral Porter, commander-in-chief, lost no time in assigning him to the *Conestoga*, a much less formidable craft than the *Cairo*. She was chiefly "engaged in patrolling the Mississippi to guard the army's supplies."

Selfridge's vision and resourcefulness were brought into play at a certain point projecting in the river where "guerillas" were particularly active against passing transports. Perceiving that the river had greatly risen and had flooded the narrow neck connecting the point and the mainland, "it occurred to me that if even a small flow of water could be started across this neck, a deep channel would soon be eroded by the river itself, thus affording a short cut between the limits of any station." To visualize was, with Selfridge, to act. "A boat's crew made short work of digging the necessary few hundred yards of ditch and before many hours a raging torrent was rapidly enlarging the cut, carrying away even large trees." Such was the genesis of "Selfridge's Cut" which completely foiled the "guerillas" and made safe the passage of that part of the river.

The *Conestoga's* boilers requiring extensive repairs, she returned to Cairo where Selfridge took command of the *Manitou*, a side wheel gun boat, converted from a river steamer, on which he cooperated with Sherman's army in the siege of Vicksburg. Indeed he actually landed his two 8-inch guns and planted them on Sherman's right where, as Admiral Porter states, the "battery was worked with marked ability and elicited the warmest praise from the commanding general."

Later, while guarding the Mississippi near the mouth of the Red River, a company of Confederates annoyed him greatly by rifle fire from behind the protection of the levee. Here again his ingenuity found its opportunity. Moving his ship to a distance, he anchored and then elevating his guns to their limit, he opened fire on the enemy with reduced charges. "In this way, by trial and error, after a few shots he managed to land two shells in their midst, apparently wounding some of them, and they retreated in short order. Probably this is one of the very few occasions when naval guns have been used as mortars."

For a third time in this war, his ship was sunk, the *Conestoga* being accidentally rammed by another vessel.

His next command was a stern wheel iron clad, the *Osage*. It is significant of his personality that her crew "was augmented by the fourteen volunteers who had kept with me since the days of the *Alligator*." Can a finer compliment be imagined?

River navigation presents difficulties not encountered in deep sea cruising, a fact illustrated in Selfridge's admirable story of the part the Navy took in the Red River Expedition and of the saving of some of its units when entrapped by the falling waters.

Later, through the fault of the pilot, the *Osage* grounded hopelessly. Selfridge proceeded in person to report the mishap to Porter, who immediately gave him the large, swift ram, *Vindicator*, which he retained until he went east with Porter to share in the attacks on Fort Fisher and to lead one of the three divisions of blue jackets in their gallant but futile assault —doomed from its very inception.

The problem of where to construct a ship canal across Central America had engaged the academic attention of the American people for generations but it began to assume national importance in the late '60's of the nineteenth century. Several routes were suggested but none could be selected until all had been thoroughly surveyed. To Selfridge fell the task of finding a practical way through Darien, the most southerly of the isthmuses in those parts. How carefully he studied, in advance, the various questions which he must solve and how complete were his preparations may be learned from his remarks: "An even greater danger than that to be expected from the natives was the notorious unhealthiness of the isthmus. Of all tropical regions it had the worst reputation for sickness. Provision against this involved proper foods and clothing, as well as medicines, camp equipment, mosquito netting, work routine, etc." With just pride he added: "The excellence of the foresight and preparations is evidenced by the fact that during three successive survey seasons not a single man died from tropical sickness, notwithstanding that frequently more than 150 men were in the field, many of them for two months at a time, exposed to constant wet and the most fatiguing labor." Again, "the success of the expedition depended upon extraordinary persistence and willingness to endure hardships. The tropical sun, torrential rains, floods, raging currents, swamps, dense vegetation, poisonous snakes, blood-sucking bats, tarantulas, scorpions, hornets, wild cats, sand flies, and mosquitoes so thick that I have seen them put out a lighted candle with their burnt bodies, all were to test our resolution to the utmost."

The result of this work which he himself considered to be "the most notable of my naval career" was embodied in his report of a practical route up the Atrato River, then parallel to its tributary, the Napipi and to the valley of the Doguado and by a three-mile tunnel through the Cordillera to the Pacific side, thence down a series of locks to sea level. Three objections caused the rejection of this site. It was too far south, other things

being equal; it necessitated a ship tunnel, and it involved locks. The second objection would have little or no weight today; the first is of lessening consequence, due to the increase of South American traffic; while the third was disregarded at Panama, although that site was selected for the very reason that there could be built a canal without locks. Why our government did not construct the type of canal that all sailors approve and one capable of indefinite expansion to meet the growing demands of shipping but did construct one which sailors do not like is a mystery as yet unsolved. Selfridge would have rejoiced had he known that *his* Atrato, Napipi, Chirichiri Bay Canal is today under serious consideration and study by a foreign company which realizes the approaching insufficiency of the Panama Canal and the desirability of a second inter-oceanic water way as a reserve in any event.

Following this duty, to which designedly so large a space is devoted in this review, Selfridge made an interesting cruise in European waters. One instance deserves mention. His ship, the *Enterprise,* under a (reputed) competent pilot would have grounded disastrously off the north of Holland had he not, perceiving the danger, taken charge himself and by skilful seamanship brought her back into deep water. His reflection, "Throughout my subsequent career afloat I trusted only to the lead, when on soundings and the position was uncertain, and acted promptly on my own judgment, even if it conflicted with a pilot's advice" should be taken to heart by naval commanders, not as an invariable rule but one to be followed with discretion when like conditions arise.

Later on he was appointed chief "of a mixed commission to select a site for a naval station in northwestern United States waters" which recommended Bremerton. The reviewer, for several reasons, has long deprecated, both privately and officially, the rejection of Lake Washington, near Seattle, believing it to offer much greater advantages.

Selfridge's last cruise, in Europe as commander-in-chief, was pleasantly eventful. He attended the coronation of the late unhappy Czar, of which his account indicates his possession of a real reportorial talent.

He was retired for age just before the war with Spain and he died February 4, 1924, having completed all but two days of his eighty-eighth year of a life full of activity and honor.

It is but natural on the part of those who had not the privilege of knowing him to wonder whether he measured up to the full standard of what a naval officer should be. Let us briefly run on over a few of the records in his case.

Was he courageous? A board of admirals which met soon after the close of the Civil War recommended that he be advanced thirty numbers "for conspicuous gallantry in battle." But there is a higher form of valor which Lord St. Vincent, in a letter to Lord Nelson, defined in these words: "Responsibility is the test of courage." Surely in this form Selfridge was not lacking.

Was he a good sailor? For being such, he was ordered to the Naval

Academy as instructor in seamanship. Moreover, in 1867, he commanded the old sailing frigate *Macedonian* during the summer practice cruise which terminated in a race from Madeira home, between the three vessels comprising Commodore Luce's squadron. The *Macedonian* reached Annapolis well in advance of the others to anchor in brilliant fashion off the Santee wharf.

Did he inspire his subordinates with loyalty to himself and with confidence in his justice and professional ability? The case of his "fourteen volunteers" seems to furnish a reply to these queries.

What was his attitude toward his colleagues and the service? His loyalty to the memory of a brother officer caused him to refrain, in this book, from mentioning the name of the captain of the *Vincennes* during his cruise on the west coast of Africa although Captain Bland was cordially detested by all on board. His concluding observations on this point are pertinent and revealing. "The close unity of thought and action that binds our profession into a great fraternity has no parallel among civilians, since in naval life there is absent that keen competition between individual practitioners which is common to all the civil professions and to the industrial world generally." Again, "Like the Army, the Navy's unifying cause is rooted in the great sentiment of patriotism—loyalty to the country; but in the Navy, due to greater activity abroad, this influence is more powerfully at work during long intervals of peace."

There is little to criticize and much to praise in the literary style of these reminiscences. For this Selfridge generously gives the credit to his collaborator, Captain Dudley W. Knox, U. S. Navy, whose introduction is a convincing tribute to the author's deeds and character. The reader will recognize the modesty which marks this tale.

The book itself is a worthy product of the Putnam Press. It contains a few contemporaneous photographs, one wishes there were more. Its only fault is the lack of an index. It is hoped that new editions will be called for which possess this highly desirable feature.

JOSHUA BARNEY. By Ralph D. Paine. Century Co. New York, 1924. $4.00.

REVIEWED BY REAR ADMIRAL ALBERT GLEAVES, U. S. NAVY, RET.

The adventures of Joshua Barney, master mariner at the age of fifteen, naval officer and diplomat, as told by Mr. Paine are as thrilling as those of Midshipman Easy, Marmaduke Merry or Tom Cringle. From preface to colophon there is not a dull line. *Se non è vero, è ben trovato.*

As we read the exciting life of this knight errant of the blue waters, we wonder why the story has never been told before, and how Miss Barney's precious manuscript from which Mr. Paine has taken his material escaped discovery so many years.

Few sea stories, even Clark Russell's or Conrad's, are as fascinating as this history of a Maryland lad who, when a child, left a comfortable

home and prosperous farm, and went to sea in search of adventures—and found so many. He ran his course in something less than three score years, but those were crowded years in which he experienced every vicissitude of a sailor's life "of want and plenty, of peace and strife."

When he was sixteen he was in command of a merchantman in the Mediterranean, and was compelled by a Spanish admiral to join an attack on Algiers. He served as an officer in the State Navies of Maryland and Pennsylvania, and also in the Federal Navy, and according to Mr. Paine, he and not John Paul Jones displayed for the first time the American flag with its thirteen stripes. He commanded many private ships, and in later years accepted a commission in the French Navy as *chef de division des armées navales,* and for this he was severely censured at home.

He had as many adventures as the Apostle Paul. Like the saint he was cast into prison, was a night and a day in the deep, in journeyings often, in perils of water, in perils of city, in perils by his own countrymen and in perils of the wilderness. Five times he was captured at sea by the British, and he suffered the tortures of a prison ship that took him to England. His thrilling escape from the Old Mill Prison at Plymouth is comparable to Casanova's famous escape from the Plombs in Venice. He fought in seventeen battles in the Revolution, and in nine in the War of 1812, and was victorious in all except the last—the battle, so-called, of Bladensburg, where, at the head of a handful of blue jackets and marines, he held his ground against the rush of British troops which scattered General Winder and his militia like chaff before the wind.

Barney loved society and pleasure, and wherever he went he met interesting people. In Paris Benjamin Franklin was fond of him, and presented him at court where he became a favorite. He was too level headed to be overcome by the splendors of Versailles, or awed by its etiquette. He kissed the cheek of Marie Antoinette and dined with Louis XVI; on another visit to Paris he had an audience with Napoleon and saluted the hand of the Empress Josephine.

He visited George Washington at Mt. Vernon and accompanied General and Mrs. Washington to the inaugural ceremonies in New York City, and thus became the first naval aide to a President of the United States. Robert Morris was deeply attached to him, and was his strongest friend in days of adversity, of which he saw many. He was a friend of John Paul Jones who on one occasion accompanied him across the Atlantic to Plymouth. This landing in England was a bold thing even for that eagle, for the Revolution was still fresh in the minds of the English, and Paul Jones, who had raided their coasts, was neither forgotten nor forgiven. Later, as commodore in the French Navy, Barney was in Haiti during the anarchy of 1798. There he became the friend and adviser of the celebrated Toussaint L'ouverture.

Joshua Barney's place in history is marked by his capture of the *General Monk* and the affair at Bladensburg. The former was a brilliant action, fought with consummate skill from start to finish, and Mr. Paine is

at his best in telling the story of this wonderful fight and victory over tremendous odds. At Bladensburg, although a sailor on horseback, he distinguished himself by his courage and tenacity; his horse was shot under him, and he received a bullet in the thigh which he carried to the grave.

He was a high strung, sensitive man who often saw slights where none were intended. His temper led him to resign twice from the Navy for fancied unjust treatment in questions of promotion. After the War of 1812, he declined a captain's commission in the Navy because he was made junior to Silas Talbot, whom he considered more soldier than sailor. He resigned from the service and went to France.

His last venture was to move his family to his forest possessions in Kentucky, but he died on the way and was buried at Pittsburgh.

It is a wonderful story. Would it be *infra dig* to suggest that it would make an extraordinary film? Certainly it would be an educational one of high value.

The book is attractive in form, but why did the proof readers allow the incorrect spelling of Commodore Truxtun's name to escape them?

EDITOR'S NOTE: A correction should be made in Lieut. Comdr. Frost's review of "Narrative of the Battle of Jutland," in the December issue of the PROCEEDINGS. On page 2141, first line of paragraph four, the word "submarine" should read "destroyer."

SECRETARY'S NOTES

Membership

Present Membership, 4248. Changes since last report: New Members, 9. Resignations, 163. Deaths, 5. Total Decrease, 159.

New members joining since last report:

Williams, L. C., (DC), U.S.N.
Sheard, W. G., Captain, U.S.M.C.
Hughes, R. D., Midshipman, U.S.N.
Agnew, W. J. C., Lieut. Comdr. (MC), U.S.N.
Dague, B. S., Lieut., U.S.N.
Moncure, J. P., Lieut., U.S.N.
Ortiz, O. R., Lieut., Cuban Navy
White, E. H., Midshipman, U.S.N.
Reno, E. M., Major, U.S.M.C.

Prize Essay Winners of Former Years

The list of prize essay winners of former years is published elsewhere in this issue.

Articles

The Institute desires articles of interest to all branches of the service, including the reserve force. Non-members as well as members may submit articles, and authors receive due compensation for articles published. Compact, well digested articles are more likely to be accepted for early publication. In accepting articles for publication, the Institute reserves the right to have such articles revised or rearranged, where necessary, in order to bring them up to the required standard of articles published in the PROCEEDINGS—the cost, if any, to be deducted from the compensation due the author.

Reprints of Articles

Twenty copies of reprints are furnished authors free of charge. Additional copies to the number desired will be furnished at author's expense, provided request is made before going to press.

Discussions

Discussion of articles published in the PROCEEDINGS is cordially invited. Discussions accepted for publication are paid for at approximately one-half the rate for original articles.

Book Reviews As soon as practicable after the publication of books on subjects of professional interest, the Institute aims to publish authoritative reviews of them.

Address of Members In the past, many errors have resulted from the habit of changing an officer's address as soon as his transfer orders are published in the papers. No change will be made in the future except upon receipt of notification by the member concerned. Reliance upon the former method may, in extreme cases, mean a delay of almost four months. To insure the prompt delivery of the PROCEEDINGS and other communications from the U. S. Naval Institute, it is essential that members and subscribers *notify the Secretary-Treasurer without delay of every change of address.* No responsibility can be accepted for failure to receive the PROCEEDINGS, where members fail to comply with this rule. Changes of address should reach the institute by the 25th of the month, to be effective for the issue of the PROCEEDINGS of the following month.

Coupons for Applications For the convenience of members making application for membership or for subscription, or informing the Institute of changes of address, a number of blank forms will be found elsewhere in this issue. It is hoped that members will take full advantage of these in order to reduce clerical work of all concerned.

H. G. S. WALLACE,
Commander, U. S. Navy, Secretary-Treasurer.

LIST OF PRIZE ESSAYS

"WHAT THE NAVY HAS BEEN THINKING ABOUT"

1879. Prize. Naval Education. Lieut. Commander A. D. Brown, U.S.N.
First Honorable Mention. Naval Education. Lieutenant Commander C. F. Goodrich, U. S. N.
Second Honorable Mention. Naval Education. Commander A. T. Mahan, U. S. N.
1880. Prize. The Naval Policy of the United States. Lieutenant Charles Belknap, U. S. N.
1881. Prize. The Type of (I) Armored Vessel, (II) Cruiser Best Suited to the Present Needs of the United States. Lieutenant E. W. Very, U. S. N.
Honorable Mention (same subject as Prize). Lieutenant Seaton Schroeder, U. S. N.
1882. Prize. Our Merchant Marine: The Causes of Its Decline and the Means to Be Taken for Its Revival. Lieutenant J. D. J. Kelly, U. S. N.
Honorable Mention (same subject as Prize). Master C. G. Calkins, U. S. N.
Honorable Mention (same subject as Prize). Lieutenant Commander F. E. Chadwick, U. S. N.
Honorable Mention (same subject as Prize). Lieutenant R. Wainwright, U. S. N.
1883. Prize. How May the Sphere of Usefulness of Naval Officers Be Extended in Time of Peace with Advantage to the Country and the Naval Service? Lieutenant Carlos G. Calkins, U. S. N.
First Honorable Mention (same subject as Prize). Commander N. H. Farquhar, U. S. N.
Second Honorable Mention (same subject as Prize). Captain A. P. Cooke, U. S. N.
1884. Prize. The Reconstruction and Increase of the Navy. Ensign W. I. Chambers, U. S. N.
1885. Prize. Inducements for Retaining Trained Seamen in the Navy, and Best System of Rewards for Long and Faithful Service. Commander N. H. Farquhar, U. S. N.
1886. Prize. What Changes in Organization and Drill Are Necessary to Sail and Fight Effectively Our Warships of Latest Type? Lieutenant Carlos G. Calkins, U. S. N.
Honorable Mention. The Result of All Naval Administration and Efforts Finds Its Expression in Good Organization and Thorough Drill on Board of Suitable Ships. Ensign W. L. Rodgers, U. S. N.
1887. Prize. The Naval Brigade: Its Organization, Equipment and Tactics. Lieutenant C. T. Hutchins, U. S. N.
1888. Prize. Torpedoes. Lieut. Commander W. W. Reisinger, U.S.N.
1891. Prize. The Enlistment, Training and Organization of Crews for Our Ships of War. Ensign A. P. Niblack, U. S. N.

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